ARCHITECTURAL RECORD

APRIL 1950

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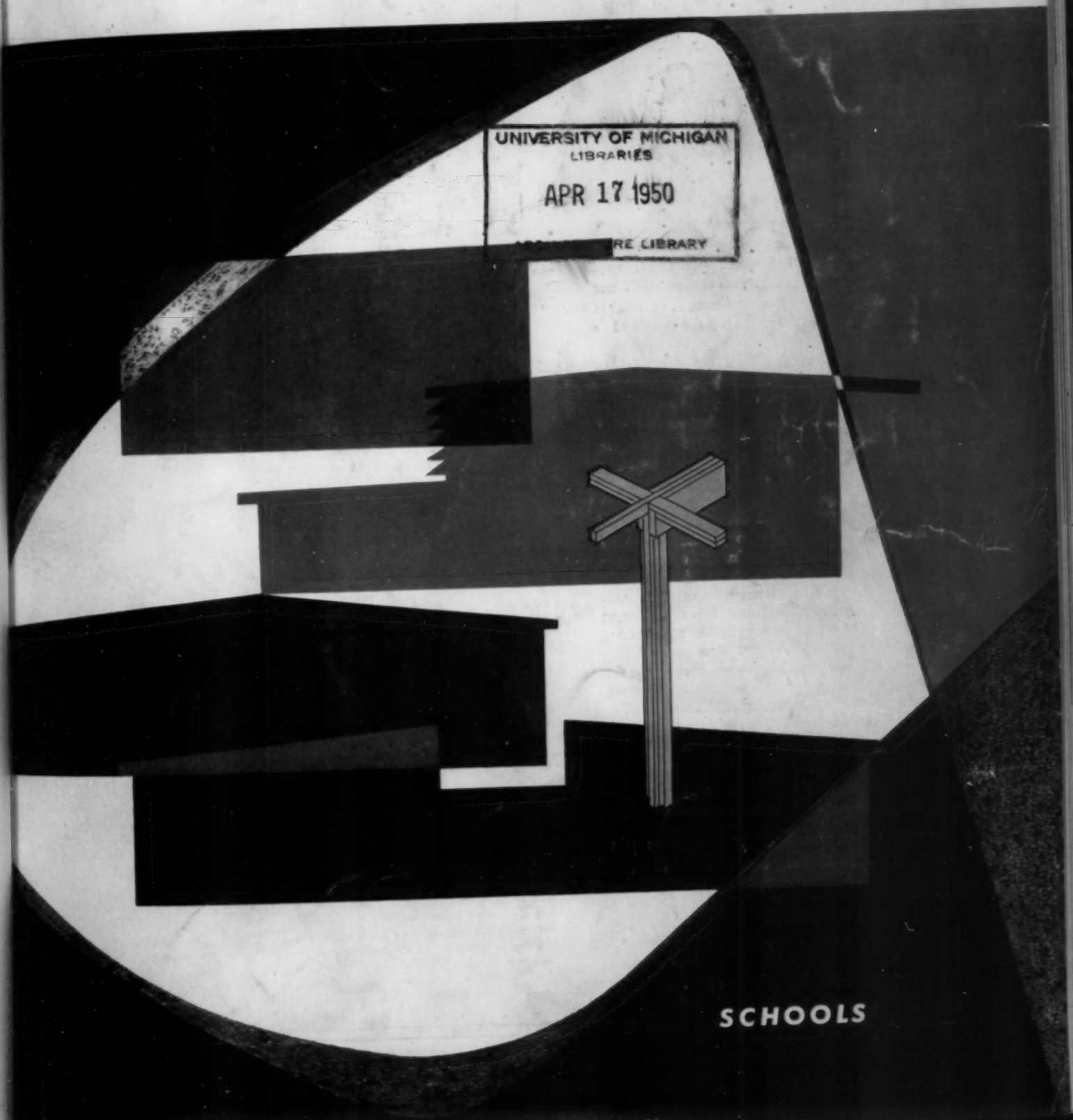

SCHOOLS

Cancelling "Holidays" in a COATING'S CALENDAR

Look closely at the picture above, and you'll see a spark jumping from the metal test panel to the electrode in the technician's left hand.

That means the coating on the panel is not in a continuous film or is broken . . . protection thereby is not complete. We say the coating has a "holiday" in it.

Sometimes these "holidays" aren't visible to the naked eye. So Flintkote researchers use this method of testing electrically to be *certain* that the coatings tested meet the conditions for which they were formulated. When the tell-tale spark appears . . . back the coating goes for further development until it passes every test with flying colors.

And this is only one of literally hundreds of painstaking tests that Flintkote researchers make on every product. Housed in one of the most modern, efficiently equipped buildings in the industry, the staff of this new research laboratory sets the pace for Flintkote plants from coast to coast . . . to assure better products and better results consistent with lowest possible costs.

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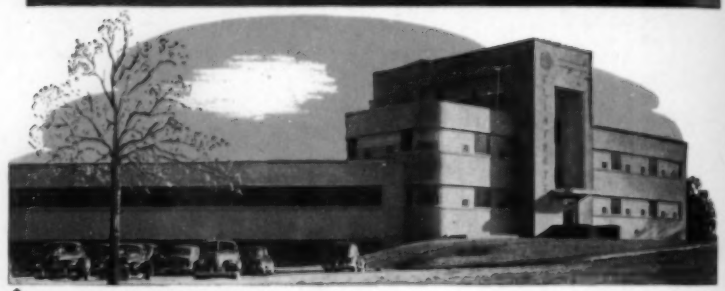
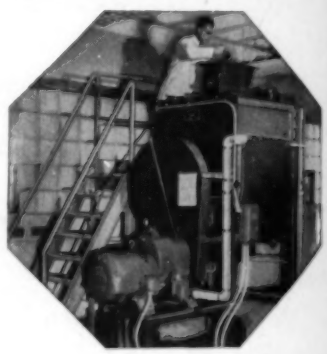
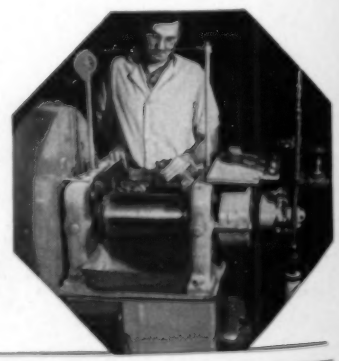


⬆ One or more of 24 separate laboratories constantly evaluate Flintkote products step by step from raw materials to field performance, from initial development to mass production. Both Company and Customers profit by this *insurance from research.*



This "pilot scale" ribbon type mixer ➡ enables the laboratory to reproduce production conditions quickly and accurately for research and testing of a variety of asphalt mastics.

⬅ Scientific equipment in use here permits complete analyses when only minute quantities, sometimes no larger than a pinhead, are available. Techniques like this assure purity, reduce cost, speed operation and increase accuracy in the Flintkote Laboratories.



This small scale rubber mill is used to ➡ break down various rubber materials to just the right consistency for use in new products or processes. Full size operation follows in the production of versatile fluid rubber and rubber-like adhesives, coatings and sealers.

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Robert R. Graham, Architect

Above: CENTRAL SCHOOL, DUNDEE, N. Y.
Robert R. Graham, Architect

Above: FORT ANN SCHOOL, FORT ANN, N. Y.
Carl W. Clark, A. I. A., Architect

Above: JUNIOR-SENIOR HIGH SCHOOL, HARRISON, N. Y.
Robert P. Vignola, Architect

ROBERT P. VIGNOLA, Architect
Harrison, N. Y.
(Junior-Senior High School)

I wish to take this opportunity, now that the Junior-Senior High School (Harrison, N. Y.) has been completed, of expressing my appreciation of the business-like way in which your firm carried thru this half million dollar project.

I can assure you that should I have another similar project, I sincerely hope that you may be the successful bidder and that I may have the opportunity of renewing the pleasant relations that have existed throughout the entire construction of this school.

(Signed) Robert P. Vignola

ROBERT R. GRAHAM, Architect
Middletown, N. Y.
(Goshen, N. Y., Dundee, N. Y., and Montpelier, Vt.)

The issuance of your final payment on the Goshen project brings to a conclusion 3 years of close association with you on the construction of 3 of my largest school buildings.

It seems appropriate now to thank you for your careful work and to congratulate you on your organization, your superintendence and ability to expedite your work.

It has been a pleasure to work with you, and I trust that we will soon have work which will be of interest to you.

(Signed) Robert R. Graham

CARL W. CLARK, A.I.A., Architect
Cortland, N. Y.
(Fort Ann School, Fort Ann, N. Y.)

. . . Thruout the progress of the work, (at Fort Ann) your corporation was all that one could ask and the completed product is one of which the School authorities, the State authorities and this office are justly proud. Our administration work was made easy due to the efficient office practices of your company.

(Signed) Carl W. Clark, A.I.A.

THE RECORD REPORTS

GROWING ATTENTION TO HOUSE DESIGN NOTED AS N.A.H.B. CONVENTION DRAWS 15,000 TO CHICAGO

SIGNS OF BOOM conditions in home construction were plentifully evident at the record-breaking convention of home builders in Chicago.

Aside from the obvious fact that builders are riding the crest of a million-a-year-home wave, RECORD readers will be concerned to note:

1. Clinics and discussions on home design — especially modern design — topped all others in interest among the builders.

2. Growing numbers of speculative — or, more politely, "volume" — builders are retaining competent architects and paying adequate fees for professional services.

3. Trends in residential planning and modern home design advocated by experienced architects for years are at long last being recognized by speculative builders and put into effect in their houses.

4. The two-and-three-quarter million dollar exhibit of equipment and materials — largest on record — showed that manufacturers have made notable strides in bringing postwar products into step with postwar design. This was especially noticeable in connection with a large number of new products involving windows, radiant heating, and slab construction. Many "packaged" home equipment products that cut on-the-job costs were in evidence. These, coupled with improved building techniques being adopted by builders, are bringing home costs down — particularly in volume operations.

15,000 Overflow Hotels

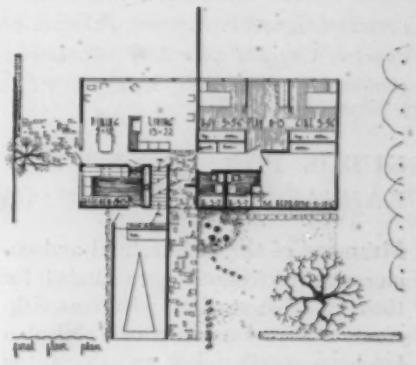
The occasion was the annual convention and exposition of the National Association of Home Builders, February 19–23, at the Stevens, Congress and Palmer House Hotels, in Chicago. Overflowing these and other hotels were some 5000 builders and 10,000 architects, dealers, manufacturers and home finance people.

Seven hundred products, displayed by 179 exhibitors, were spread out in every inch of available space in the Stevens and Congress. The very size and complexity of the convention alone was an indication of the boom conditions in the industry, with simultaneous clinics, discussion panels and ballroom assemblies attended by capacity crowds.

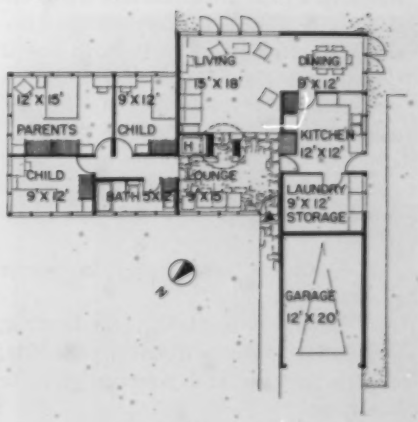
A cautious note was sounded by Frank W. Cortwright, executive vice president of the Association, when he pointed out that building moves in waves or cycles and that "busts" frequently follow hard on booms. But there was little indication that any such unhappy thoughts disturbed the builders who overwhelmed exhibits, meetings, convention halls and dining facilities of the hotels.

Builders were reminded by Rodney Lockwood, N.A.H.B. president, that January home building "starts" were the highest on record, topping January 1949 by 60 per cent. He expressed the belief that a million homes will again be built in 1950.

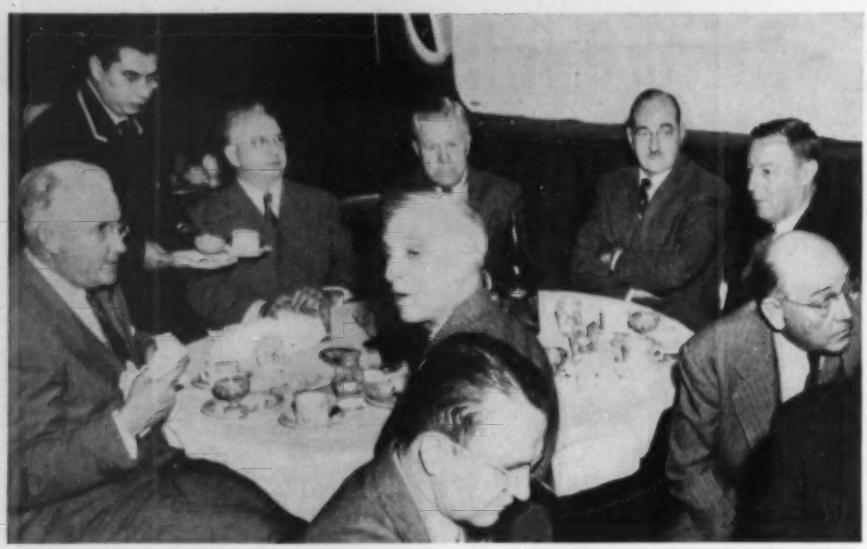
(*Continued on page 234*)



Prize-winning designs in the competition sponsored by American Builder Magazine. Awards were made at convention. Above: second prize; below: first prize



Prizewinners Elizabeth Graham Bell (right) and Sonia Jean Albert with E. J. Gavin



At the Kansas City luncheon (left to right): Joseph B. Shaughnessy, Kansas City A.I.A. president; Ernest E. Howard, A.S.C.E. president; Lorenz Schmidt, A.I.A. Central States director; City Manager L. P. Cookingham; Ellsworth Philby, program steering comm. chairman; A. L. Walters, Kansas City C. of C. president. Center: Mayor William E. Kemp

KUDOS FOR ARCHITECTS AND ENGINEERS: KANSAS CITY LOOKS OVER THE RECORD

MEMBERS of the architectural and engineering professions were lauded for their valuable service and accomplishments over a long span of years at a luncheon meeting last month of the Kansas City Chamber of Commerce. The meeting was the 32nd program of a series entitled "Kansas City on Parade" presented under the auspices of the professions and industries, with funds raised by architects and engineers.

Arthur Ellison, of the Kansas City Little Theater, who was the introductory speaker, reviewed the work of the architects and engineers, noting especially the American Society of Civil Engineers, founded in 1852, and the American Institute of Architects, in 1857.

A feature of this meeting was a screen display depicting important services rendered by the architects and engineers in Greater Kansas City. Students of the dramatic department of William Jewell College, Liberty, Mo., acted as narrators voicing the accomplishments of the engineers and architects. The "voices" analyzed the following seven operations:

1. Engineers specializing in water supply, sewer systems and sanitation projects.

2. Engineers specializing in power plants, electricity.

3. Engineers specializing in heating, ventilation, air conditioning, plumbing, electric lighting and power wiring for buildings.

4. Engineers specializing in facilities for transportation, airports, railroads, highways, streets, grain elevators and bridges.

5. Architects who design homes for better living.

6. Architects who design housing for commerce and industry.

7. Architects who design schools, hospitals, civic buildings, institutions.

Mr. Ellison in his introductory speech stated that "today in our Kansas City our architects and engineers are recognized for their high ideals, integrity and technical experience." He pointed out that there are in Kansas City today 77 architectural firms, employing approximately 350 persons, and 37 engineering firms employing about 1000 people. Their volume of business for 1948 totaled approximately $25,000,000 and $110,000,000 respectively, he said.

Luther Orville Willis, A.I.A., of Kansas City, reported that only professionals conducting practices of their own were included in the solicitation of funds to carry on this program.

"On the whole," Mr. Willis stated, "we believe the ethical manner in which the program was conducted and the fact that the script was broadcast by a local radio station on two different occasions since, indicated that a most favorable impression has been created in the minds of many laymen in this area regarding the type and quality of service rendered by architects and engineers.

A.A.S.A. CONVENTION SEES A.I.A.-SPONSORED EXHIBIT

APPROXIMATELY 100 different school plans and models were viewed by many of the 14,000 educators, a record number, attending the 76th annual convention of the American Association of School Administrators. School designs from almost every state in the country were presented at the exhibit, "Schools of Tomorrow," which was held in Atlantic City, February 25 through March 2. This is understood to be the first exhibit of plans to be presented at the full national convention.

Highlights of the schools on display were tendencies toward:

a) greater emphasis on functional architecture as opposed to monumental.

b) leaning to one-story structures, on large plots of land.

c) wide use of bilateral lighting and use of clerestory as compared to unilateral lighting.

d) wide range of newer building materials.

e) several examples of pentagonal and sawtooth designs, especially in California.

f) pastel shades for classroom color.

g) larger classrooms, especially for elementary schools.

The exhibition was set up under the auspices of the A.I.A. The rules required the school illustrated to have been completed since 1945 or to have had the general contract let; all designs to have been done by a registered architect.

The committee handling the school design phase of the exhibit consisted of Shirley Cooper, assistant executive secretary of the A.A.S.A.; Ray Hammond, school building specialist, U. S. Office of Education, Federal Security Administration, Department of the Interior; John Lewis of Baltimore, school building specialist; Howard Dwight Smith, professor of architecture, Ohio State University; and William Caudill, John E. Nichols and Henry Blatner, all practicing architects, from Texas, Connecticut and New York respectively.

At the exhibit: Ray L. Hammond, chief of school housing, U. S. Office of Education; Asst. A.A.S.A. Secretary Shirley Cooper

Fred Hess & Son Photo

WASHINGTON UNIVERSITY BUILDS CANCER RESEARCH LABORATORY

A LABORATORY for cancer research will be completed this summer at Washington University Medical School in St. Louis, the first of a number of new buildings to be constructed for the school.

Located between two existing buildings which date back to the early years of this century, the laboratory forms a continuous connection between them at all levels, and has been planned to achieve the flexibility possible with movable partitions and other present-day techniques. (Above: left, construction photo; right, photo of rendering.)

The new building will be of reinforced concrete frame with brick and limestone trim. Windows are of aluminum and glazing is of blue-green heat-reducing glass.

Cost of the structure, $700,000, is being met jointly by the University and the federal government, each furnishing half of the funds.

Harris Armstrong of Kirkwood, Mo., is the architect.

At the speakers' table, 36th annual convention, Michigan Society of Architects: (left to right) Andrew R. Morison, H. A. Manley, Edmund R. Purves, Col. George B. Walbridge, William Hazlett Upson, Roger Allen and the Society's president, Alden B. Dow

200 ATTEND 36TH ANNUAL CONVENTION OF MICHIGAN SOCIETY OF ARCHITECTS

MORE THAN 200 architects and guests were registered at the Michigan Society of Architects' 36th annual convention at Detroit's Hotel Statler March 9 and 10.

A panel discussion on architects and city planning was led by presidents of the three A.I.A. chapters in Michigan: Andrew R. Morison, Detroit; Christian Steketee, Western Michigan; and Donald A. Kimball, Saginaw Valley.

"The Architect's Responsibility to the Young Graduate" was discussed by Charles B. McGrew, George W. Sprau and John Mackenzie.

The Producers' Council took charge of one section with a presentation of "What's New in the Building Industry," supplementing comprehensive displays of members' products.

Eleven hundred attended the banquet, at which Col. George B. Walbridge of Walbridge-Aldinger Co., general contractors, received an award for service to the building industry. William Hazlett Upson was the speaker, and Roger Allen, A.I.A., toastmaster.

Carl B. Marr, A.I.A., of Detroit, was convention chairman.

STRESS SMALL HOUSES AT WILLIAMSBURG SYMPOSIUM

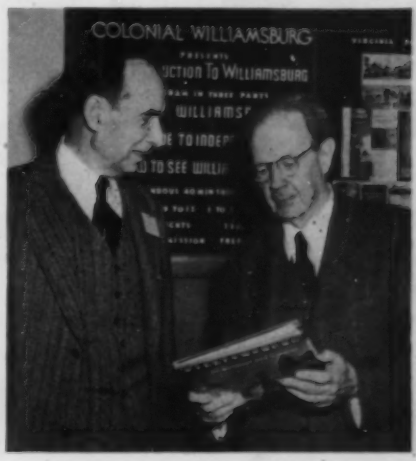
ARCHITECTS, landscape architects and interior decorators were sprinkled among 300 people from 24 states at the fourth Colonial House & Garden Symposium held in two separate but similar sessions last month at Williamsburg, Va.

The symposium, broadened this year to include talks and discussions on small houses, was sponsored by *House & Garden* and Colonial Williamsburg, Inc.

Harvard Dean Joseph Hudnut's opening talk, "We Are No Longer Colonials," created a mild flurry when it evoked newspaper headlines like the *New York Herald Tribune's* "Harvard Dean Is Critical of Williamsburg." What Dean Hudnut intended, as he was busy reiterating next day, was a protest against copying without understanding. Houses must express the "temper of life," he said.

Prof. Carroll L. V. Meeks of Yale discussed design of Colonial houses in New England in the first session, as did Consultant William G. Perry of Colonial Williamsburg in the second. A. Lawrence Kocher, Colonial Williamsburg Records Editor, covered Colonial house design in Virginia at both sessions.

Mr. Kocher (left) and Dean Hudnut in talk



APARTMENT DESIGN PRIZE-WINNERS ANNOUNCED

Iowa State Senior Is First in Timber Engineering Competition

MAURICE E. FREITAG, 25-year-old senior student in architecture at Iowa State College, Ames, Ia., has won the $1500 First Major Award in the architectural prize competition sponsored by the Timber Engineering Co.

Mr. Freitag's design for an eight-family residential building of wood frame construction was adjudged best of 276 entries submitted by practicing architects and architectural students in the nationwide competition.

Student entries were also judged in a separate category; and in this division the first prize of $500 has been awarded to Emmit A. Ingram Jr., a senior student in architecture at Texas A. and M. University, College Station, Tex.

Other major awards were made as follows: Second Prize ($750) — C. E. Stade, architect, and M. J. Dolan, engineer, Chicago, Ill.; Third Prize ($500) — R. T. Morrisett, architect, Springfield, Ill.

These student awards were also given: Second Prize ($250) — Allan B. Mitchell, Carnegie Tech; Third Prize ($150) — Milton Holtzman, Georgia Tech.

In addition, there were 10 major Honorable Mentions ($100) and seven student Honorable Mentions ($50).

The general problem of the competition, which had the approval of the Committee on Competitions of the American Institute of Architects, was the design and plot layout of a residential building of wood frame construction with wood exterior finish. The building was to provide living accommodations for eight families of such sizes as would be encountered in a rental project catering to moderate income groups. The contest located the building in a suburban area where ample ground on the site was available for service, parking, play, garden and lawn areas. It was requested that designs postulate a building similar in scale and character to a well-planned single family residence in privacy, appeal and opportunity for use of outdoor space.

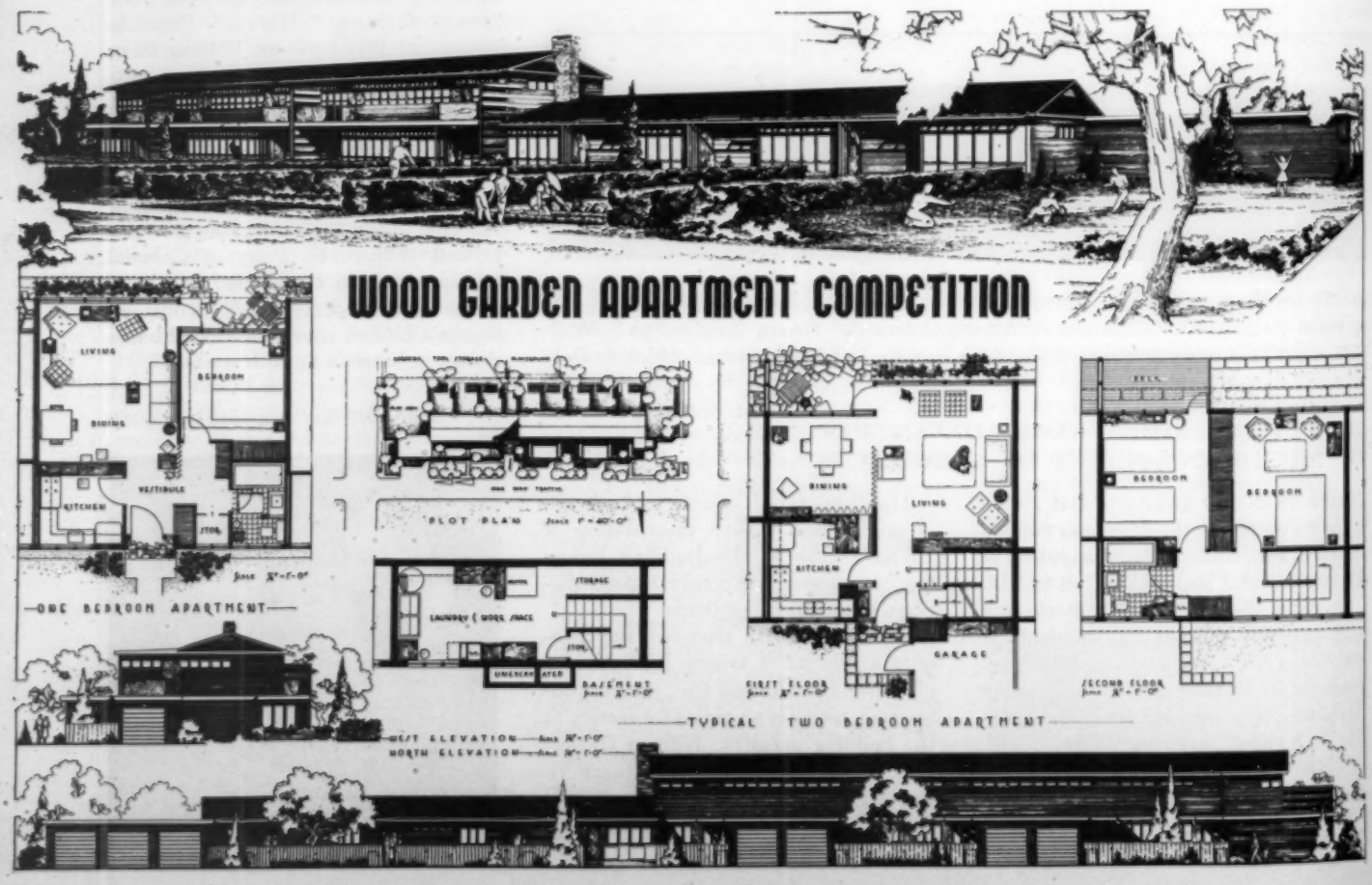
Mr. Freitag's first prize design was conceived for a location at Fort Dodge, Ia., described as follows: "The plot is at the northern end of a large block with the apartment forming the northern part of a perimeter composed of private dwellings. The interior of the block provides an area of community green and gravelled play areas."

The modern character of Mr. Freitag's entry has been achieved without resort to bizarre detail. The judges felt the building had been well oriented for sun and view, and that apartment units had been planned with good circulation. It was also noted that garages had been well related to the entrance of duplex apartments, and that the north (front) elevation had been skillfully designed.

Members of the Jury of Awards were: George W. Petticord Jr., A.I.A., Washington, D. C.; John M. Walton, A.I.A., Washington, D. C.; Edward R. Carr, Builder, Washington, D. C. Lawrence M. Stevens, Architect, of Washington, D. C., was professional adviser.

Copies of the Jury Report are available from: Timber Engineering Co., 1319 18th St., N.W., Washington 6, D. C.

Below: Maurice E. Freitag's First Major Award-winning board for the Timber Engineering Co. apartment competition



WASHINGTON NEWS *by Ernest Mickel*

Title VI Expires: What Happens to "Dangling" Programs? Sparkman Bill Concedes Need for Larger Houses; GSA Sees Construction Industry at Postwar Turning Point

CONGRESS permitted Title VI (Sec. 608) National Housing Act to expire March 1 and temporarily failed to take any action on the Title I and II programs, thereby injecting the usual amount of confusion and uncertainty into the operations of the housing industry. True, architects and builders had been warned by federal housing officials and members of Congress as well that they could expect these events — at least there was repeated assurance that the Sec. 608 rental housing insurance program would end. Nevertheless, as March began, Federal Housing Administration field offices were swamped with their application backlogs and the whole construction industry waited to see how Congress would resolve, if indeed it would resolve, the newly posed problem of dangling programs.

The government's economy housing program, hinging on the continued operations under Title II, appeared to be in no danger despite delays permitted by Congress. The $8.5 billion revolving fund was returning several million dollars for loan insurance on small homes each month. FHA officials admitted that if no further money authorizations were forthcoming from Congress "in a few weeks," the Title II small homes program would slow down to its more normal course of two years ago. There has been a synthetic stimulation of the Title II activity over the past 20 months or so which would certainly disappear if the current revolving fund total had to be relied on for full operations.

The middle-income housing bill, however, as it was reported out by the Senate Banking Committee a month ago, proposed to increase the amount by $1750 million — $750 million to be made available immediately and $1 billion later at the discretion of the President.

Thus the tendencies during March pointed toward a return of the housing insurance programs to prewar purposes. The regular permanent mortgage insurance provided under Title II was first set up in 1934 for sale and rental housing, based on the long-term economic value (as a basis for valuation) rather than on necessary current costs. The latter phrase, applying to such "emergency" measures as the Sec. 608 rental housing program, had its warborn critical connotation. This is reflected in the Banking Committee's report on Sen. Sparkman's middle-income housing bill, S. 2246: "Unlike the periodic authorizations under Title VI, the Title II authorization was intended to provide a permanent revolving fund related to the outstanding obligations of insured mortgages."

Now, with the Title VI provisions definitely out of the picture, architects and builders will be turning to what advantages they can find in Title II sections. Even before Congress finally acted on the legislation, FHA field offices were told to inform applicants for Sec. 608 commitments that they may have the option of converting the 608s requested to Sec. 207 under Title II. If they decided to convert, they would be credited with fees paid. If cost estimating had been completed by the FHA office on the 608 application, but no commitment had been issued prior to expiration of the program March 1, applicants were told their fees would not be returned.

No new application was necessary to convert. It was required merely that the proposed construction meet all the requirements of Sec. 207, Title II, which varied in considerable detail from the former Sec. 608 requirements under Title VI.

(Under the expired section, FHA insured up to $9000 per unit or 90 per cent of the cost. If Congress put through the middle-income bill, and thereby amended the National Housing Act, insurance of 90 per cent of the first $7000 and 60 per cent of the balance up to $10,000 would be provided.)

During the past few months the Title II authorization has been used up at an average monthly rate of $178 million. It is therefore essential, says the Banking group, that an increase be provided.

Larger Houses Needed

Congress was beginning to recognize the legitimate complaint of architects that they cannot plan, and builders that they connot construct, housing of adequate size under federal programs

(*Continued on page 16*)

— Drawn for the RECORD by Alan Dunn

THE RECORD REPORTS

WASHINGTON

(*Continued from page 15*)

of limiting benefit. The Banking Committee of the Senate put it this way: "The testimony presented to your committee indicated that it is generally difficult, if not impossible, for a builder to erect a three- or four-bedroom house at a cost that will permit him and the purchaser to receive full advantage of mortgage insurance on the most favorable terms."

This general language of the committee means that it is convinced, from the arguments given it by builders, that the law should be changed to provide more incentive to the planning and construction of homes with more space. This is expressed in the terms "three-bedroom and four-bedroom houses."

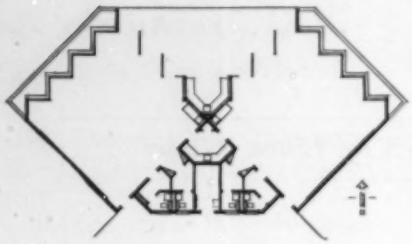
To achieve such a goal — design and erection of larger homes, particularly in metropolitan areas where the need is felt to be greatest — the Sparkman bill would do this:

Amend Sec. 203 (b) (2) (D) of the National Housing Act to authorize insurance of a 30-year mortgage which does not exceed $6650, or 96 per cent of the value of the property up to not more than $7000 value. This boosts the present maximum eligible mortgage amount by $650 for the most liberal FHA insurance. It provided further that if the FHA Commissioner finds it not feasible, within this increased dollar amount limitation, to construct dwellings with three or four bedrooms each without sacrifice of sound standards of construction, design and livability, he may increase the eligible mortgage amount by $950 or less for each additional bedroom in excess of two. The total amount of the mortgage under this section thus could not exceed $7600 on a three-bedroom house valued at $8000, or $8550 on a four-bedroom house valued at $9000.

Progress of the Legislation

Writers of the bill said they expected FHA to proceed immediately with a re-examination of its minimum property requirements. It was expected to make changes necessary to bring the additional benefits outlined above to the home construction industry. Congress appears to be convinced that minimum standard changes must accompany lib-

(*Continued on page 18*)



Above: Floor plan, typical classroom unit

"TWO SIDES FACE NORTH" IN NEW LAKELAND SCHOOL

CLASSROOMS with "two sides of each room facing north" are under construction at Lakeland School in the Little Lake school district, Santa Fe Springs, Calif.

Ralph C. Flewelling and Walter L. Moody, the architects, in describing this project report that the revolutionary design of the classrooms will give the buildings a unique appearance and use, through its ceiling-to-ceiling windows, forming a triangle of window-wall area for each room. Plywood louvers and glass panels are set at 90 deg angles.

According to the architects, the panel fins are 5 ft apart, and oriented directly north and south to form a series of large vertical louvers. The 5-ft floor space between the panels is filled with steel sash running from floor to ceiling, and facing directly north. This forms a series of 90 deg triangles composing the northeast and northwest walls of glass and louvers. The ceilings are of asbestos fibre, pitched in two directions to get the greatest amount of reflected light.

Lakeland School will have six double classroom buildings, including kindergarten building and an administration-library structure, according to the plans drawn by Flewelling and Moody. Future plans call for a cafeteria-auditorium combination, and three additional double classroom buildings. The separate units are to be connected by covered walks. Roofs of the classroom buildings will be supported by steel trusses which bear the walls and steel columns concealed in plywood fins.

Lakeland School is to occupy a 10-acre site at Lakeland Avenue and will house classes from the kindergarten through the fourth grade. Plans have been approved by the State Division of Architecture, Department of Public Works.

NEWS FROM CANADA *By John Caulfield Smith*

COMPLETE FIRST UNIT OF SCHOOL FOR CRIPPLED BOYS AND GIRLS

THE initial project of "Variety Village," a vocational and residential school for crippled children, has been completed at Scarborough, Ont.

The school, believed to be the only one of its type in Canada, is being built and equipped by the Variety Club of Toronto. A. G. Facey and Gibson and Pokorny are the architects.

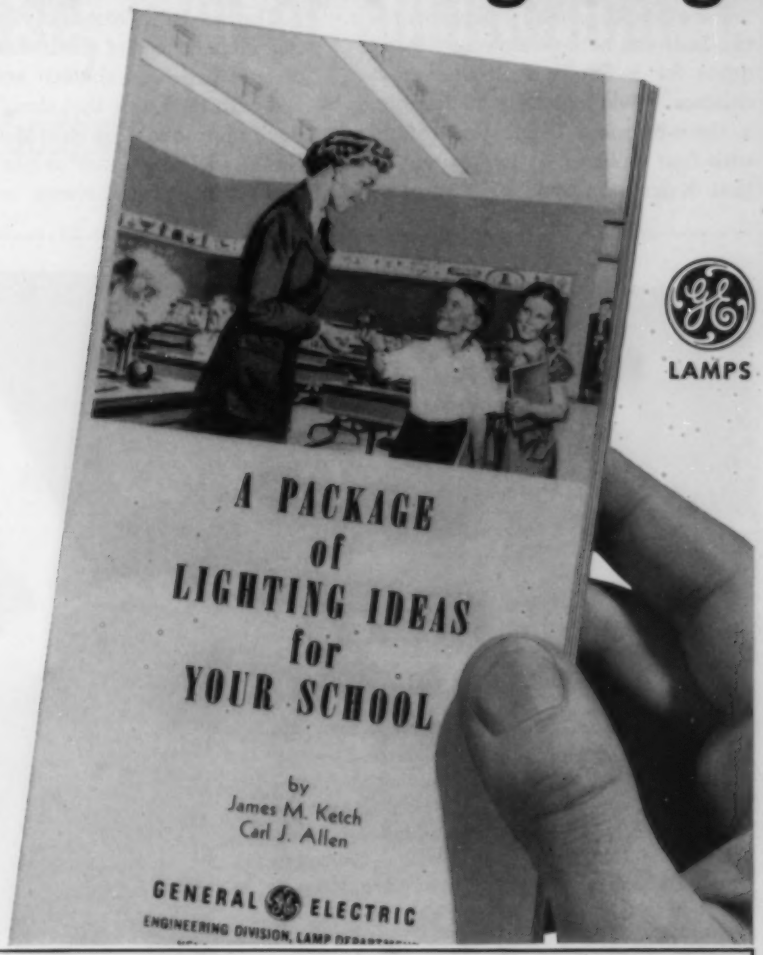
The first unit (photo below) provides for 24 boys, cost $250,000. Later extensions will increase capacity to 48 boys and 48 girls. Included in the project are clerical and manual training wings and assembly room.

(*Continued on page 222*)

Panda Photograph

New General Electric booklet gives practical help on school lighting!

JUST OFF THE PRESS!



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Tells how to select wall and trim colors

Shows 6 actual wall and trim colors. All designed to produce efficient, comfortable, balanced-brightness environment. For north, south, east and west exposure class-rooms, and cafeterias, corridors, washrooms, libraries, art rooms, foyers, kindergartens.

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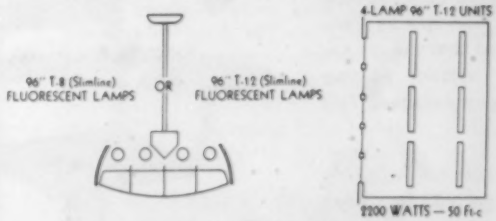
COMPARISON OF FILAMENT AND FLUORESCENT LIGHTING. How the systems compare for wattage, initial cost, maintenance. Factors that influence selection of each.

FACTORS IN COMFORTABLE LIGHTING. The three components that affect visual efficiency and comfort of students.

RECOMMENDED REFLECTANCE PATTERN. Diagram shows brightness ratios for ceiling, wall areas, floor, chalkboard, tackboard, desk top, trims. Gives recommended wood and floor finishes.

RECOMMENDED FOOTCANDLE LEVELS. Lists minimum maintained footcandles for various rooms in school. Defines illumination terms.

Tells about 14 basic school lighting systems



FOUR LAMP DIRECT-INDIRECT FLUORESCENT SYSTEM

Diagram at left shows one of the basic systems recommended. Book covers direct and indirect, filament and fluorescent systems. Also shows actual photos of installations.

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WASHINGTON *Cont. from p. 16*

eralizing of the law. For by what other method, it is asked, can the planning of essential accommodations other than bedrooms be insured?

For example, a small dining room in a two-bedroom house which may be adequate for a family with one or two children, would be totally inadequate in a three-bedroom house for a family with four children. It is apparent also that design standards for a three-bedroom or four-bedroom house should be quite different in other respects from design standards appropriate for one- and two-bedroom dwellings.

The legislation came out of the Banking committees of both houses only after it had been shuffled and re-shuffled with the result that clean bills were finally introduced by each group. While the House committee sought to make Title I improvement loan insurance a permanent affair, the Senate committee finally backed down to a two-year extension after hearing Chairman McCabe of the Federal Reserve Board testify on inflationary aspects of the measure. These and other less-important differences would have to be ironed out in conference if the legislation were to get that far.

The House Banking committee voted its bill out 11 to 4 after extensive hearings. It contained the highly debatable cooperative housing section and immediately ran up against Rules Committee opposition. It became more and more apparent that Committee Chairman Spence would have to invoke the 21-day rule to bypass the Rules group. The House last fall voted down a direct loan proposal for cooperative and other nonprofit housing corporations. Its mood is not likely to have changed much on the subject by this time. The Appropriations Committee is beginning to show signs of raising the economy axe again, and at this writing the middle-income bill faced a stormy floor session in the lower body. The Republicans withheld their opposition in large measure during the committee hearings, offering no amendments in executive session. The big blow was being delayed purposely for the floor battle.

Chances for the middle-income program appeared somewhat better on the Senate side, although Senator Robert A. Taft (R-Ohio), an acknowledged friend of former housing measures on the liberal side, had come out against this one. He apparently disagreed with the proposed move to set up a National Mortgage Corporation for Cooperative Housing in which the federal government would sink $100 million as an initial investment. This sum, it was argued by proponents, would be replaced eventually by $200 million of privately subscribed share capital.

The measure could not get to the floor until Senators talked themselves out on the Displaced Persons bill. Sen. Sparkman had hopes of its being called up before the Gas bill, scheduled after DP's, and Floor Leader Lucas had assured it would certainly come up before the expected filibuster on FEPC.

Meanwhile, Senators Sparkman and Maybank clung to their previous assurance there would be no more temporary extensions of mortgage insurance programs before the consideration of the middle-income proposal (the Housing Act of 1950), S. 2246.

(*Continued on page 20*)

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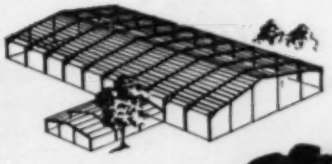
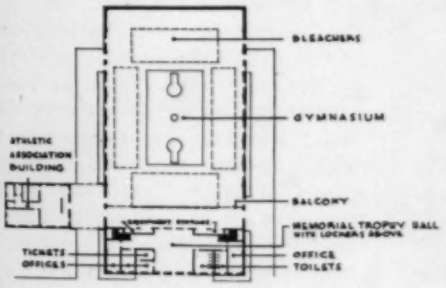


WE PROVIDE THE STANDARD STEEL FRAME



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WASHINGTON *Cont. from p. 18*

Federal Building Program

General Services Administration spokesmen are taking the view that all construction now stands at a turning point in its postwar course. Expressing this position before the Associated General Contractors of America, Inc., assembled for annual convention in San Francisco, James W. Follin, a GSA special assistant, said the relative position of construction volume in relation to the entire economy needs to be studied closely. We may well be at a turning point, he opined. Either construction shall begin to move forward from here on to occupy its proper position in the national economy, or it shall begin to taper off so that the country will not have the facilities it needs nor the construction industry the opportunity to utilize fully its talents.

With private building declining somewhat, Follin fears the balance will be lost unless this decline is reversed or public construction is increased to offset the drop. A private construction drop of moderate degree in 1949 was offset by a $1 billion increase in public construction. Now, those in the know are looking for public construction to increase still further in 1950 — probably to $6 billion.

Follin observed: "Public construction expenditures are steadily approaching the historic ratio of one-third of total construction, or one-half of private construction. Will they reach this position, and can they be even further increased?" There is an obvious need for higher annual public construction volume. The known needs in all fields make the $6 billion annual figure "seem so grossly inadequate."

Planning Program Proceeds

GSA is moving ahead with the revived advance planning program for non-federal public works. Working on the initial $25 million made available by Congress for commitment, the agency was accelerating its loan approvals in a way reminiscent of the days before the program was temporarily stopped on July 1, 1947. Applications are being received in increasing number and now exceed $10 million in loans requested. These interest-free loans pay for the planning of such projects as schools, hospitals, local streets, municipal buildings, waterworks, etc.

GSA feels the most important feature of this advance loan program to be this: it inculcates into municipal practice orderly and considerate habits, under which adequate time is taken to plan on a long-range basis and for thorough design of public improvements. This procedure, it is claimed, obviates the need for hurried and precipitate and frequently incomplete treatment when projects are planned and designed after the projects have been submitted to the electorate, and bonds voted, when the public has probably become impatient for the improvements.

Finally, the federal government's building needs are known to be very great; the lack of needed facilities is costly in itself. A $40 million site acquisition and plan preparation program is now in progress. This will encompass 575 projects spreading through all Congressional districts; post offices for the most part. No construction funds for this have been appropriated but sentiment for starting actual building in

(*Continued on page 22*)

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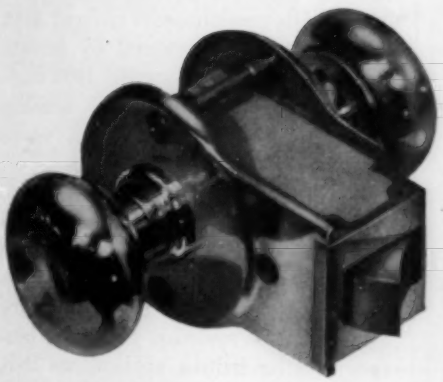
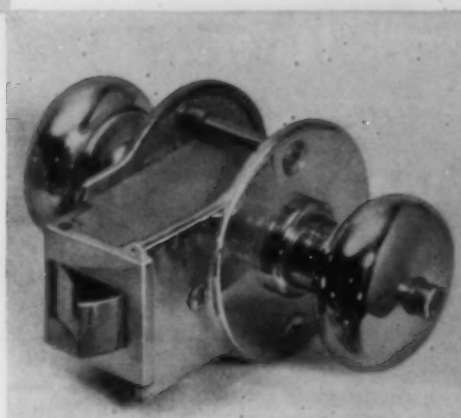
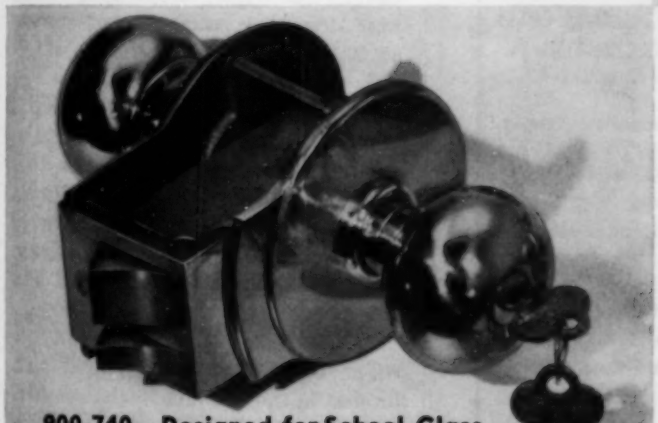


900-710 — Interior Door Latchset. Operates by knob from either side at all times.



900-730 — Privacy Lockset for Bath or Bedroom Doors. Operates by knob from either side except when locked by push-button in inside knob. Turn of inside knob releases locking mechanism.



900-740—Designed for School, Classroom Doors. Key operated locking mechanism in outside knob only. Normal turn of inside knob opens door at all times.

900-780 — For Residences, Apartments and Office Doors. Operates by knob from either side and by key from outside when locked by turn piece in inside knob.

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THE RECORD REPORTS

WASHINGTON

(*Continued from page 20*)

1951 is developing. In the main, private architects are designing these structures; architects located in the particular districts.

Shorts

• The Federal Housing Administration issued commitments on approximately 18,000 units of prefabricated housing in 1949, about half the volume of all prefabricated housing turned out. Yet FHA insured only one-third of the total housing volume produced in all types. The prefab commitments covered $118 million in loans advanced by private lenders, an increase over the 1948 business. Largest loan insurance activity centered in midwestern states where the larger plants are located.

• The military housing construction program under the Wherry Act (Title VIII) had gone through the throes of an adjustment period. Defense Secretary Louis Johnson reviewed processing procedures after halting applications Dec. 16. The ban was effective about two months and a half. Before applications were stopped, construction had started on 2250 units, but the three services had approved preliminary plans for 31,000 dwelling units. This is rental housing constructed by private builders and designed by private architects. It is located on or near military reservations. The stop order did not affect Wherry Act projects where proposals had been received or scheduled. It shut off new proposals only.

• The building industry showed keen interest in the fate of the fabulous Lustron Corp., makers of enamel-covered steel houses at Columbus, Ohio. Reconstruction Finance Corp. had gone ahead with its foreclosure action, asking a receiver in an effort to recoup as much as possible of its $37.5 million loans to the firm.

MODULAR COORDINATION FUND APPROACHES GOAL

The American Institute of Architects and the Producers' Council, co-sponsors of modular coordination, have set up a plan which will result in a specialist being retained by the Department of

Education and Research of the A.I.A. to promote the use of modular coordination.

According to Charles M. Mortensen, managing director of the Producers' Council, prospects are bright for reaching the goal of $15,000 for the special fund being contributed by manufacturers of building materials and equipment to promote wider understanding and adoption of modular coordination as a means of reducing construction costs. The fund, to which the A.I.A. is also contributing, is being set up within the American Architectural foundation.

"Considerable emphasis has been given to the adoption of modular coordination through the efforts of the Housing and Home Finance Agency," Mr. Mortensen said, "but the work of that agency is confined to housing. The raising of the special fund will mean that proper emphasis also can be placed on the use of modular design and materials in commercial, industrial and other non-residential construction.

"The fact that substantial savings in building costs can be effected by coordinating the dimensions of materials has been demonstrated beyond question by studies undertaken at the University of Illinois and by use of the principles in actual construction of hospitals and other buildings."

ON THE CALENDAR

Apr. 10–16: VII Congress of Panamerican Architects, Havana, Cuba.

Apr. 12–14: Spring Meeting, The American Society of Mechanical Engineers, Hotel Statler, Washington, D. C.

Apr. 19–21: Spring Meeting, American Society of Civil Engineers, Los Angeles, Calif.

Through Apr. 29: Eleventh Annual Exhibition, National Serigraph Society, Serigraph Galleries, 38 W. 57th St., New York, N. Y.

Apr. 11–May 7: Exhibition of photographs and drawings of recently completed school buildings, The Art Alliance, 251 S. 18th St., Philadelphia.

May 1–3: 38th Annual Meeting, Chamber of Commerce of the United States, Washington, D. C.

May 6–8: Meeting of the Board of Directors, The American Institute of Architects, Washington, D. C.

May 8–9: 36th Annual Meeting of the Association of Collegiate Schools of Architecture, Mayflower Hotel, Washington, D. C.

(*Continued on page 24*)

New Veterans Administration 475-bed hospital now being completed by Merritt-Chapman & Scott at Wilkes-Barre, Pa.
Kelly & Gruzen—Architects.

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THE RECORD REPORTS

(*Continued from page 23*)

May 8–9: Meeting of the National Council of Registration Boards, Washington, D. C.

May 9: Meeting of the Producers' Council, Washington, D. C.

May 10–13: 82nd Annual Convention, The American Institute of Architects, Washington, D. C.

June 26–30: 53rd Annual Meeting and ninth exhibit of testing apparatus and related equipment, American Society for Testing Materials, Chalfonte-Haddon Hall, Atlantic City, N. J.

June 12–15: 43rd Annual Convention, National Association of Building Owners and Managers, Olympic Hotel, Seattle, Wash.

AT THE COLLEGES

Architectural Schools Should Create Artists, Howe Asserts

The producing of artists was the function ascribed to architectural schools in a speech by Chairman George Howe of the Yale Department of Architecture before alumni of the School of Fine Arts.

"I hasten to add," he said, "that an artist who is not technically competent in his art is no artist. Some critic has said that every esthetic advance of an artist is a new technical experience. That is important."

Discussing the common criticisms of architectural schools by architects on the ground that they do not adequately prepare for a professional career, Professor Howe warned that "we must not lose sight of the fact that the primary purpose of architectural schools is to create architects, not to prepare draftsmen for office work.

"Draftsmen as such can probably be better prepared in technical schools and offices. The comparative success that architectural schools have achieved in creating architects is easier to estimate than their alleged failure in preparing draftsmen, for it is visible to the eye in our buildings, and it is not unworthy of admiration."

Professor Howe said that more good young architects are being prepared for practice now because of the "encouragement of free individual development in the field of design.

"With this process over-emphasis on technical preparation must not be al-

(*Continued on page 184*)

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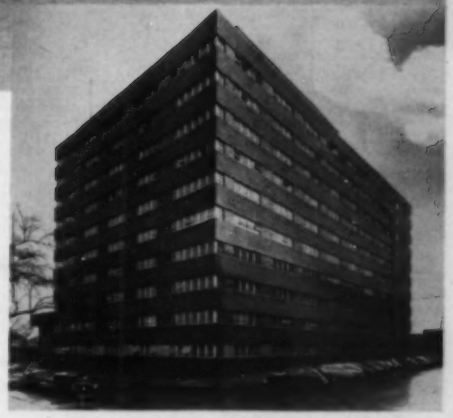

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CONSTRUCTION COST INDEXES

Labor and Materials

United States average 1926–1929 = 100

Presented by Clyde Shute, manager, Statistical and Research Division, F. W. Dodge Corp., from data compiled by E. H. Boeckh & Assocs., Inc.

NEW YORK

Period	Residential		Apts., Hotels Office Bldgs.	Commercial and Factory Bldgs.	
	Brick	Frame	Brick and Concr.	Brick and Concr.	Brick and Steel
1925	121.5	122.8	111.4	113.3	110.3
1930	127.0	126.7	124.1	128.0	123.6
1935	93.8	91.3	104.7	108.5	105.5
1939	123.5	122.4	130.7	133.4	130.1
1940	126.3	125.1	132.2	135.1	131.4
1945	160.5	161.7	156.3	158.0	155.4
1946	181.8	182.4	177.2	179.0	174.8
1947	219.3	222.0	207.6	207.5	203.8
1948	250.1	251.6	239.4	242.2	235.6
Nov. 1949	242.7	239.4	241.0	244.2	237.6
Dec. 1949	242.4	238.9	241.4	244.5	237.8
Jan. 1950	242.8	239.4	242.3	245.2	241.2
	% increase over 1939				
Jan. 1950	96.6	95.6	85.4	83.8	85.4

ATLANTA

Period	Residential		Apts., Hotels Office Bldgs.	Commercial and Factory Bldgs.	
	Brick	Frame	Brick and Concr.	Brick and Concr.	Brick and Steel
1925	86.4	85.0	88.6	92.5	83.4
1930	82.1	80.9	84.5	86.1	83.6
1935	72.3	67.9	84.0	87.1	85.1
1939	86.3	83.1	95.1	97.4	94.7
1940	91.0	89.0	96.9	98.5	97.5
1945	132.1	133.9	123.2	122.8	123.3
1946	148.1	149.2	136.8	136.4	135.1
1947	180.4	184.0	158.1	157.1	158.0
1948	199.2	202.5	178.8	178.8	178.8
Nov. 1949	184.8	186.0	178.2	177.8	175.1
Dec. 1949	184.5	185.5	178.6	178.1	175.3
Jan. 1950	184.5	185.5	179.2	178.6	177.7
	% increase over 1939				
Jan. 1950	113.8	123.2	88.4	83.4	87.6

ST. LOUIS

1925	118.6	118.4	116.3	118.1	114.4
1930	108.9	108.3	112.4	115.3	111.3
1935	95.1	90.1	104.1	108.3	105.4
1939	110.2	107.0	118.7	119.8	119.0
1940	112.6	110.1	119.3	120.3	119.4
1945	152.8	152.3	146.2	148.5	145.6
1946	167.1	167.4	159.1	161.1	158.1
1947	202.4	203.8	183.9	184.2	184.0
1948	227.9	231.2	207.7	210.0	208.1
Nov. 1949	220.9	219.2	214.2	217.9	215.4
Dec. 1949	220.7	218.9	214.6	218.2	215.7
Jan. 1950	220.3	218.4	214.7	218.4	216.5
	% increase over 1939				
Jan. 1950	99.9	104.1	80.9	82.3	81.9

SAN FRANCISCO

1925	91.0	86.5	99.5	102.1	98.0
1930	90.8	86.8	100.4	104.9	100.4
1935	89.5	84.5	96.4	103.7	99.7
1939	105.6	99.3	117.4	121.9	116.5
1940	106.4	101.2	116.3	120.1	115.5
1945	146.2	144.3	144.5	146.8	147.9
1946	159.7	157.5	157.9	159.3	160.0
1947	193.1	191.6	183.7	186.8	186.9
1948	218.9	216.6	208.3	214.7	211.1
Nov. 1949	213.6	207.6	215.2	220.0	215.4
Dec. 1949	214.0	208.0	215.7	220.4	215.8
Jan. 1950	213.3	207.0	216.7	220.6	216.9
	% increase over 1939				
Jan. 1950	102.0	108.5	84.6	81.0	86.2

The index numbers shown are for combined material and labor costs. The indexes for each separate type of construction relate to the United States average for 1926–29 for that particular type — considered 100.

Cost comparisons, as percentage differences for any particular type of construction, are possible between localities, or periods of time within the same city, by dividing the difference between the two index numbers by one of them; i.e.:

index for city A = 110
index for city B = 95

(both indexes must be for the same type of construction).

Then: costs in A are approximately 16 per cent higher than in B.

$$\frac{110-95}{95} = 0.158$$

Conversely: costs in B are approximately 14 per cent lower than in A.

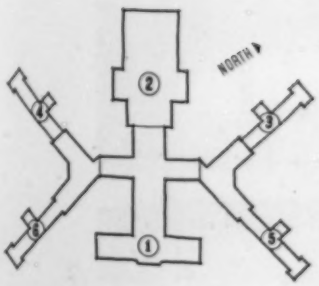
$$\frac{110-95}{110} = 0.136$$

Cost comparisons cannot be made between different types of construction because the index numbers for each type relate to a different U. S. average for 1926–29.

Material prices and wage rates used in the current indexes make no allowance for payments in excess of published list prices, thus indexes reflect minimum costs and not necessarily actual costs.

These index numbers will appear whenever changes are significant.

U.S. NAVAL HOSPITAL, BEAUFORT, S.C.



Design:

Paul P. Cret, Architect; and his successors, Harbeson, Hough, Livingston & Larson; and J. N. Pease & Co., Associated Architects-Engineers. Schematic layouts by Bureau of Yards and Docks

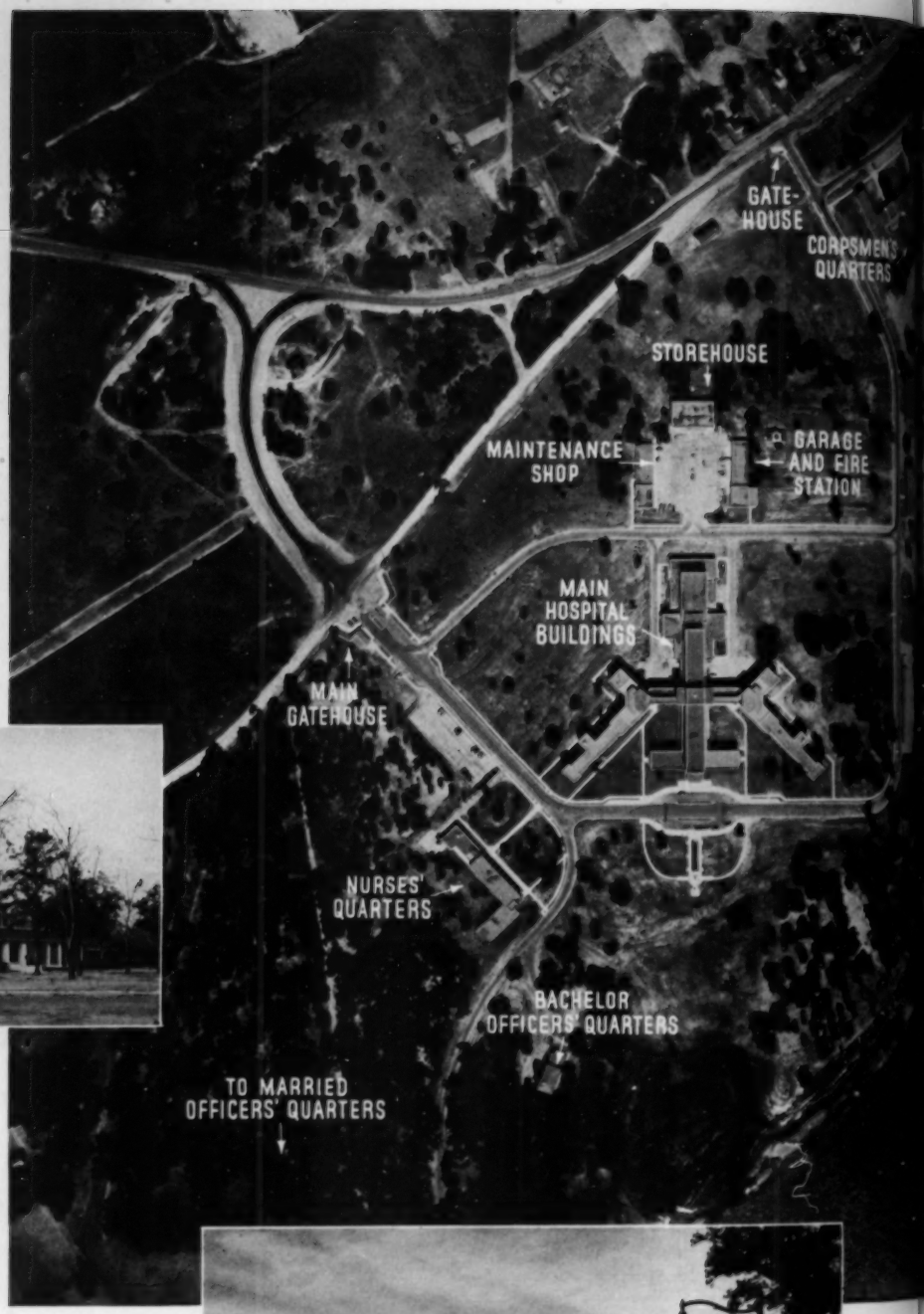
General Contractors:

Principal construction: Thompson & Street Co.; site preparation and raw water supply: V. P. Loftis Co.

Supervision:

Design and construction: Bureau of Yards and Docks, Navy Dept.

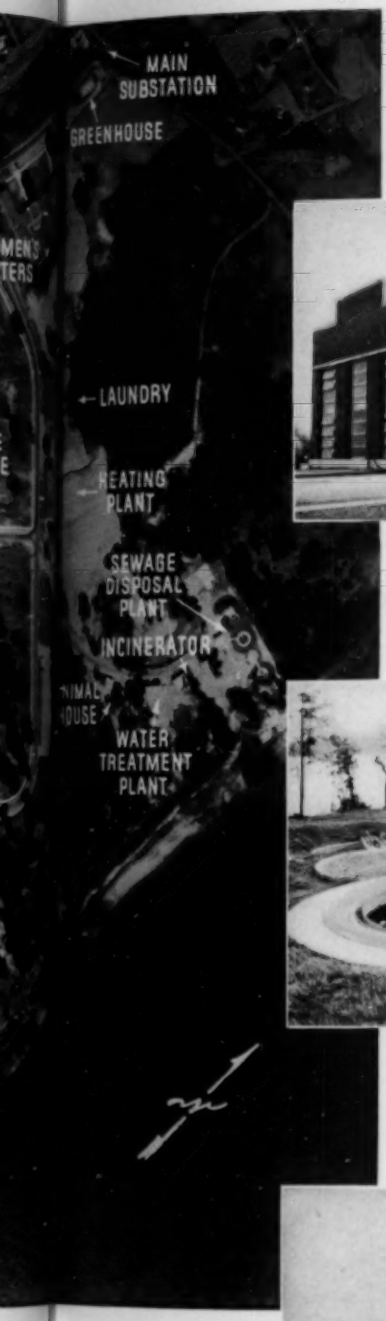
1



2

Study of the fully developed site, a 115-acre tract of high land fronted by a bluff on the Beaufort River, reveals the extent to which a permanent naval hospital is a complete facility — almost a small naval station — including many structures in addition to the main hospital building. A few are illustrated: ***1****, Nurses' Quarters;* ***2****, Bachelor Officers' Quarters;* ***3****, Corpsmen's Quarters;* ***4****, Heating Plant;* ***5****,* ***6****, Sewage Treatment Plant. (Photos courtesy Bureau of Yards and Docks, Navy Department)*

3



4

5

6

THE NAVAL HOSPITAL, Beaufort, S. C., is part of the post-war, permanent hospital construction program of the U. S. Navy. It replaces an outmoded hospital at the Marine Corps Depot, Parris Island, two and one-half miles away — an agglomeration of "temporary" buildings, which had been in use many years, on an inappropriate site.

The new steel, concrete, and masonry hospital, commissioned April 29, 1949, has a present capacity of 300 beds on a 500-bed chassis, so to speak (administration, treatment, subsistence, recreation and welfare facilities); it is designed for future expansion by adding ward wing units to complete the double-Y plan of the main building group.

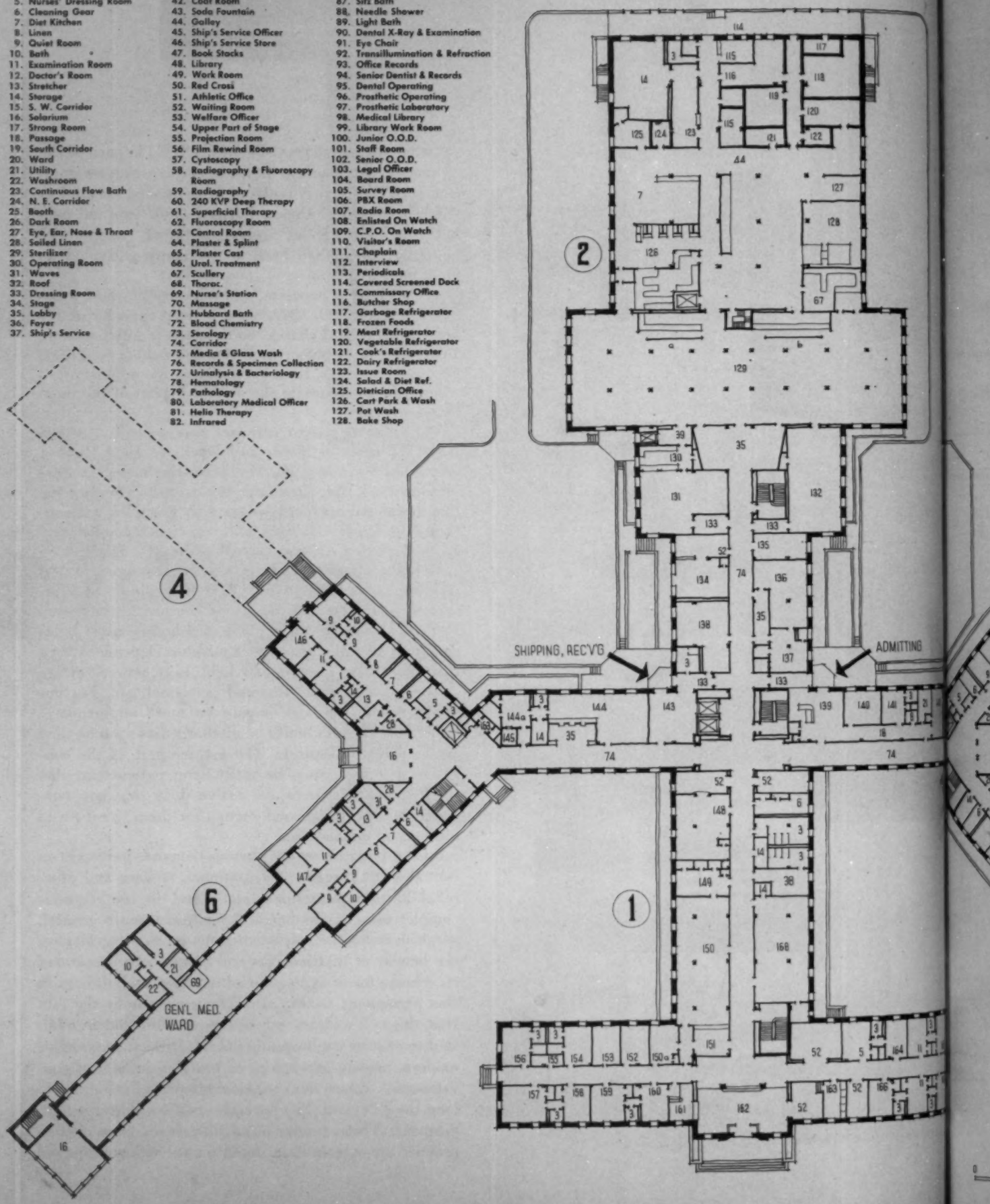
The original design contract was awarded by the Navy's Bureau of Yards and Docks to Paul P. Cret and J. N. Pease & Co., Architects-Engineers. In September, 1945, Mr. Cret died; this was shortly after the first design studies had been started. The work was continued by Harbeson, Hough, Livingston & Larson, and J. N. Pease & Co., Associated Architects-Engineers.

It was recognized from the start that a modern, permanent naval hospital differs in many important respects from a civilian facility of comparable capacity. For one thing, the naval plant of this type must be as complete an establishment as possible, dependent very little on civilian resources for light, heat, power, sewage disposal, medical services and personnel, etc. For another — and this is perhaps even more important — patients cannot normally be discharged as soon as they are in private hospitals. The greater part of the convalescent period must be spent here; patients are discharged only when fit for active duty or when convalescence has progressed enough for them to return to full normal civilian life.

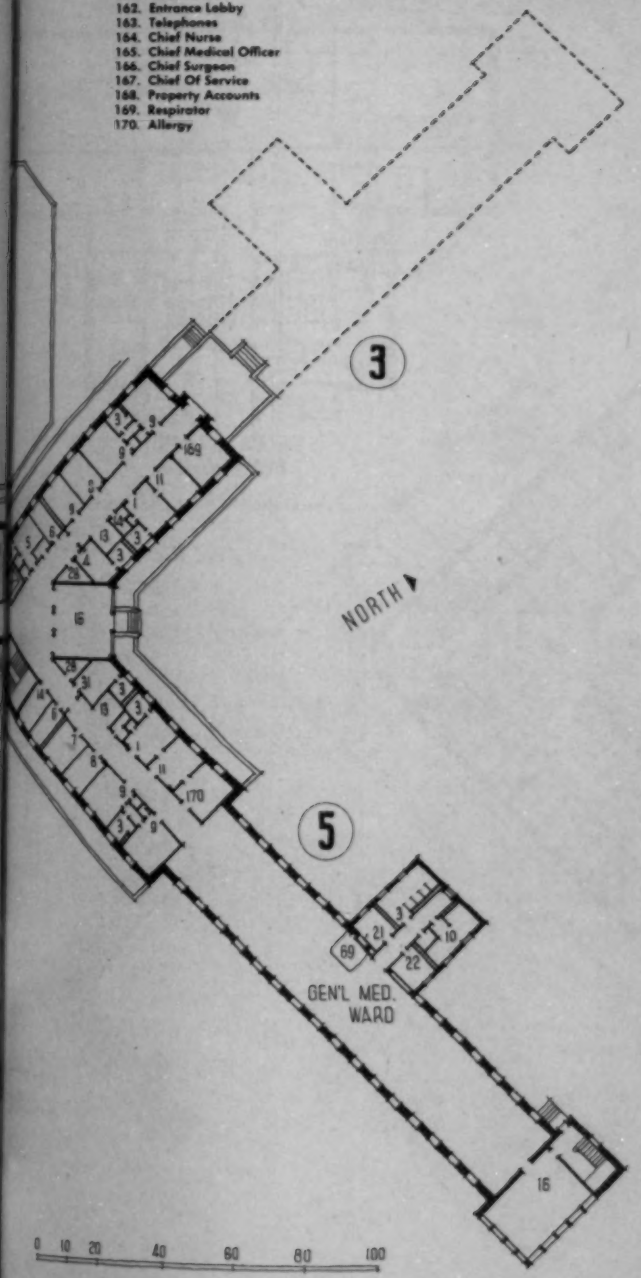
Such a program makes obvious demands in respect to convalescent therapy (occupational, welfare and other rehabilitation procedures, etc.); and to the requisite completeness of the hospital facilities (acute general, surgical, isolation, outpatients, etc.; even maternity for the benefit of married Navy personnel). In support of its scheme for design of the actual hospital buildings in this permanent facility, the Navy cites both the fact that this is a military establishment, and that in addition to customary hospital facilities it must provide for modern medico-psychological practice in aiding convalescence. Since the convalescent period is relatively long, the Navy concept appears sound for a military establishment. These fundamental differences from civilian practice are explained in detail on the following pages.

FIRST FLOOR, MAIN STRUCTURE

1. Doctor's Office
2. Stair Lobby
3. Toilet
4. Corpsmen
5. Nurses' Dressing Room
6. Cleaning Gear
7. Diet Kitchen
8. Linen
9. Quiet Room
10. Bath
11. Examination Room
12. Doctor's Room
13. Stretcher
14. Storage
15. S. W. Corridor
16. Solarium
17. Strong Room
18. Passage
19. South Corridor
20. Ward
21. Utility
22. Washroom
23. Continuous Flow Bath
24. N. E. Corridor
25. Booth
26. Dark Room
27. Eye, Ear, Nose & Throat
28. Soiled Linen
29. Sterilizer
30. Operating Room
31. Waves
32. Roof
33. Dressing Room
34. Stage
35. Lobby
36. Foyer
37. Ship's Service
38. Women's Lounge
39. Entry
40. Game Room
41. Men's Lounge
42. Coat Room
43. Soda Fountain
44. Galley
45. Ship's Service Officer
46. Ship's Service Store
47. Book Stacks
48. Library
49. Work Room
50. Red Cross
51. Athletic Office
52. Waiting Room
53. Welfare Officer
54. Upper Part of Stage
55. Projection Room
56. Film Rewind Room
57. Cystoscopy
58. Radiography & Fluoroscopy Room
59. Radiography
60. 240 KVP Deep Therapy
61. Superficial Therapy
62. Fluoroscopy Room
63. Control Room
64. Plaster & Splint
65. Plaster Cast
66. Urol. Treatment
67. Scullery
68. Thorac.
69. Nurse's Station
70. Massage
71. Hubbard Bath
72. Blood Chemistry
73. Serology
74. Corridor
75. Media & Glass Wash
76. Records & Specimen Collection
77. Urinalysis & Bacteriology
78. Hematology
79. Pathology
80. Laboratory Medical Officer
81. Helio Therapy
82. Infrared
83. Ultraviolet
84. Diathermy
85. Leg Bath
86. Arm Bath
87. Sitz Bath
88. Needle Shower
89. Light Bath
90. Dental X-Ray & Examination
91. Eye Chair
92. Transillumination & Refraction
93. Office Records
94. Senior Dentist & Records
95. Dental Operating
96. Prosthetic Operating
97. Prosthetic Laboratory
98. Medical Library
99. Library Work Room
100. Junior O.O.D.
101. Staff Room
102. Senior O.O.D.
103. Legal Officer
104. Board Room
105. Survey Room
106. PBX Room
107. Radio Room
108. Enlisted On Watch
109. C.P.O. On Watch
110. Visitor's Room
111. Chaplain
112. Interview
113. Periodicals
114. Covered Screened Dock
115. Commissary Office
116. Butcher Shop
117. Garbage Refrigerator
118. Frozen Foods
119. Meat Refrigerator
120. Vegetable Refrigerator
121. Cook's Refrigerator
122. Dairy Refrigerator
123. Issue Room
124. Salad & Diet Ref.
125. Dietician Office
126. Cart Park & Wash
127. Pot Wash
128. Bake Shop



129. Mess Hall
129a. Staff
129b. Patients
130. Pantry
131. C.P.O. Mess
132. Officer's Mess
133. Vestibule
134. Barber Shop
135. Hospital Corps Detail Office
136. Disbursing
137. Paymaster
138. Property Receiving Office
139. Admitting
140. Accident Treatment
141. Women's Ward
142. Men's Ward
143. Shipment Receiving Lobby
144. Post Office
144a. Officer In Charge
145. Vault
146. Salvarsan
147. Basal Metabolism
148. Pharmacy
149. Records
150. General Record Office
150a. Officer In Charge
151. Public Space
152. Officer Mail Room
153. Master At Arms
154. Personnel Officer
155. Stores
156. Admin. Asst.
157. Medical Officer In Charge
158. Stenographer
159. Executive Officer
160. O.D.
161. Information
162. Entrance Lobby
163. Telephones
164. Chief Nurse
165. Chief Medical Officer
166. Chief Surgeon
167. Chief Of Service
168. Property Accounts
169. Respirator
170. Allergy



In the Naval Hospital at Beaufort, S. C., the main buildings (administration, treatment, wards, subsistence, welfare) contain 296,000 sq ft, or 3,870,200 cu ft.

The Administration and Treatment Building (1) contains the necessary administrative offices, operating rooms, laboratories, library, etc.; and patient facilities for staff officers and maternity cases. Directly behind, in Building No. 2, are the mess hall, a complete galley and, above these, recreational facilities. Buildings Nos. 3 and 4 are at present stubs to which future ward wings can be attached; all necessary building services are now in place, ready for extension when the additions are built. The stubs contain some patient rooms. Buildings Nos. 5 and 6 are wards, three floors high. Patient capacity is as follows:

Bldg No. 1 — Sick Officers Quarters	46
Maternity (dependents)	29
Bldgs Nos. 3 & 4 (stub wings, 2 Quiet Rooms per floor, 3 floors per building)	24
Bldg No. 5 — (3 floors; general medical, isolation, and surgical wards)	96
Bldg No. 6 — (3 floors; general medical, N.P. and surgical wards)	107
Total Beds	302

(When extended, Buildings Nos. 3 & 4 will increase capacity by 200 beds.)

It is in the use of open, multi-bed wards (without cubicle partitions), as distinct from the "Copenhagen" type of multi-bed ward of four or six cubicles, that the Navy's scheme differs from civilian practice. The Navy has found that the open, multi-bed ward provides the neatest and most orderly space for the care of the military patient; in the Navy's experience it is preferred by most patients and personnel; and in addition to being cheerful and comfortable it has proved to be both efficient to operate and economical to maintain. The location of nurses' station and toilet-utility wing, midway of the multi-bed space, contributes greatly to the attainment of these characteristics.

Surgical Ward

Center, below, are second and third floors of Subsistence and Welfare Building No. 2, containing a 458-seat auditorium, Navy Exchange, and recreation rooms

1. Doctor's Office
2. Stair Lobby
3. Toilet
4. Corpsmen
5. Nurses' Dressing Room
6. Cleaning Gear
7. Diet Kitchen
8. Linen
9. Quiet Room
10. Bath
11. Examination Room
12. Doctor's Room
13. Stretcher
14. Storage
15. S. W. Corridor
16. Solarium
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19. South Corridor
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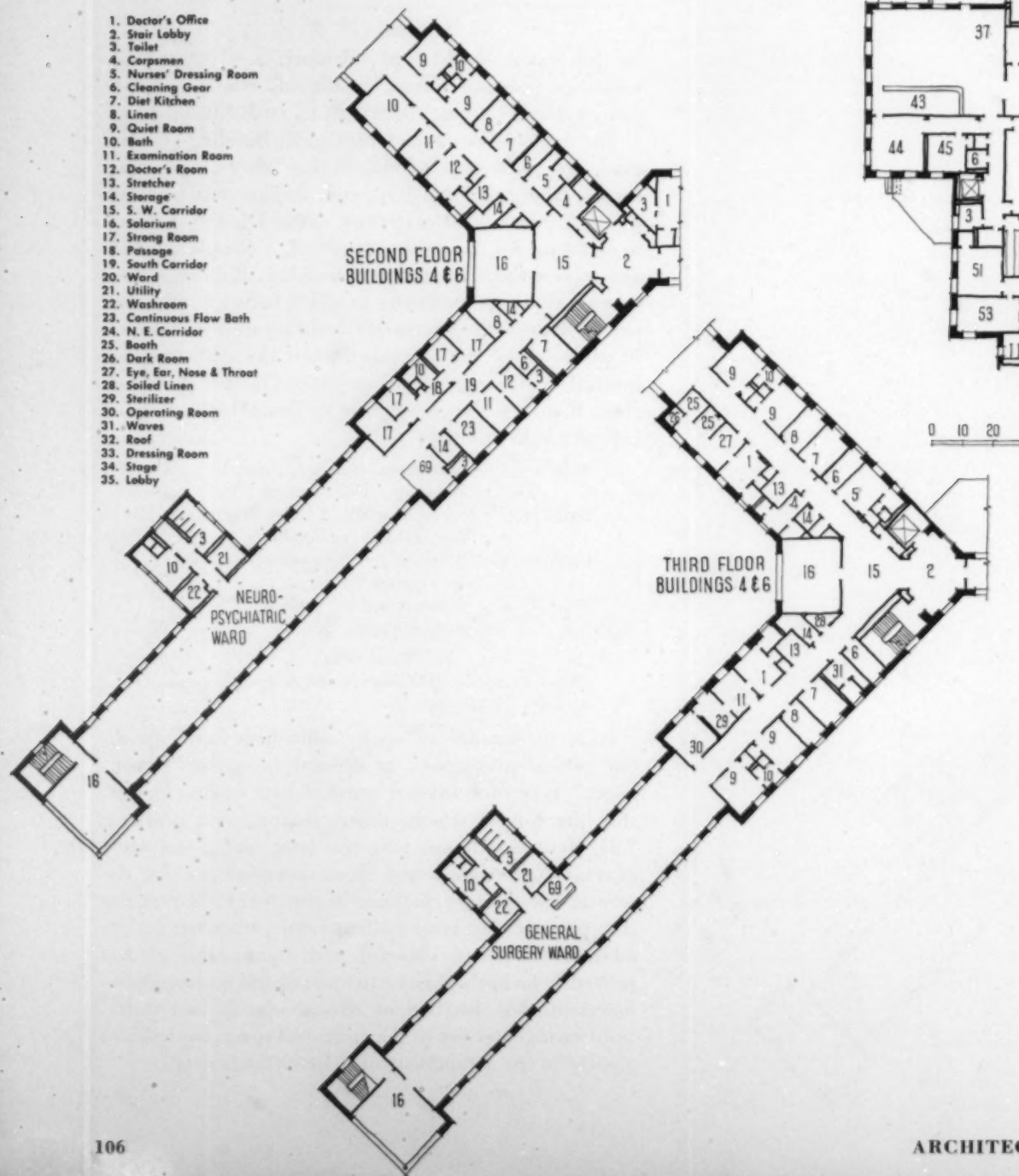
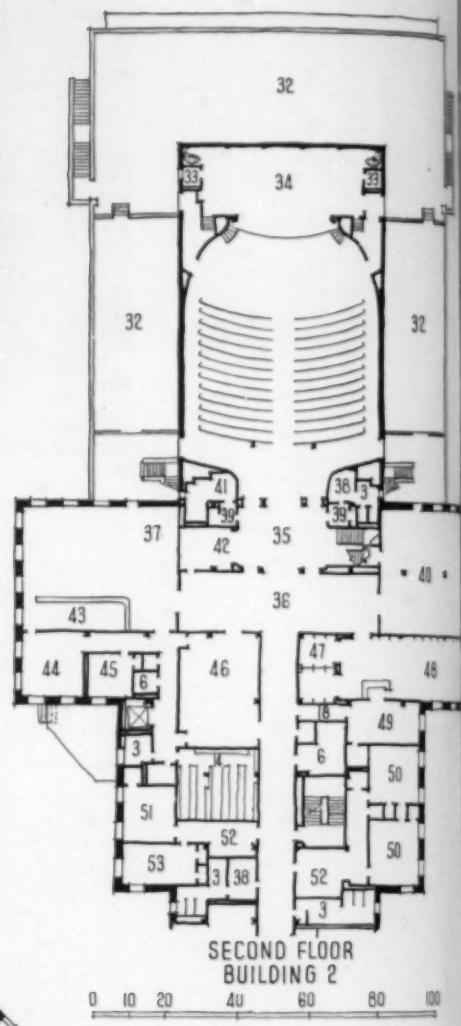
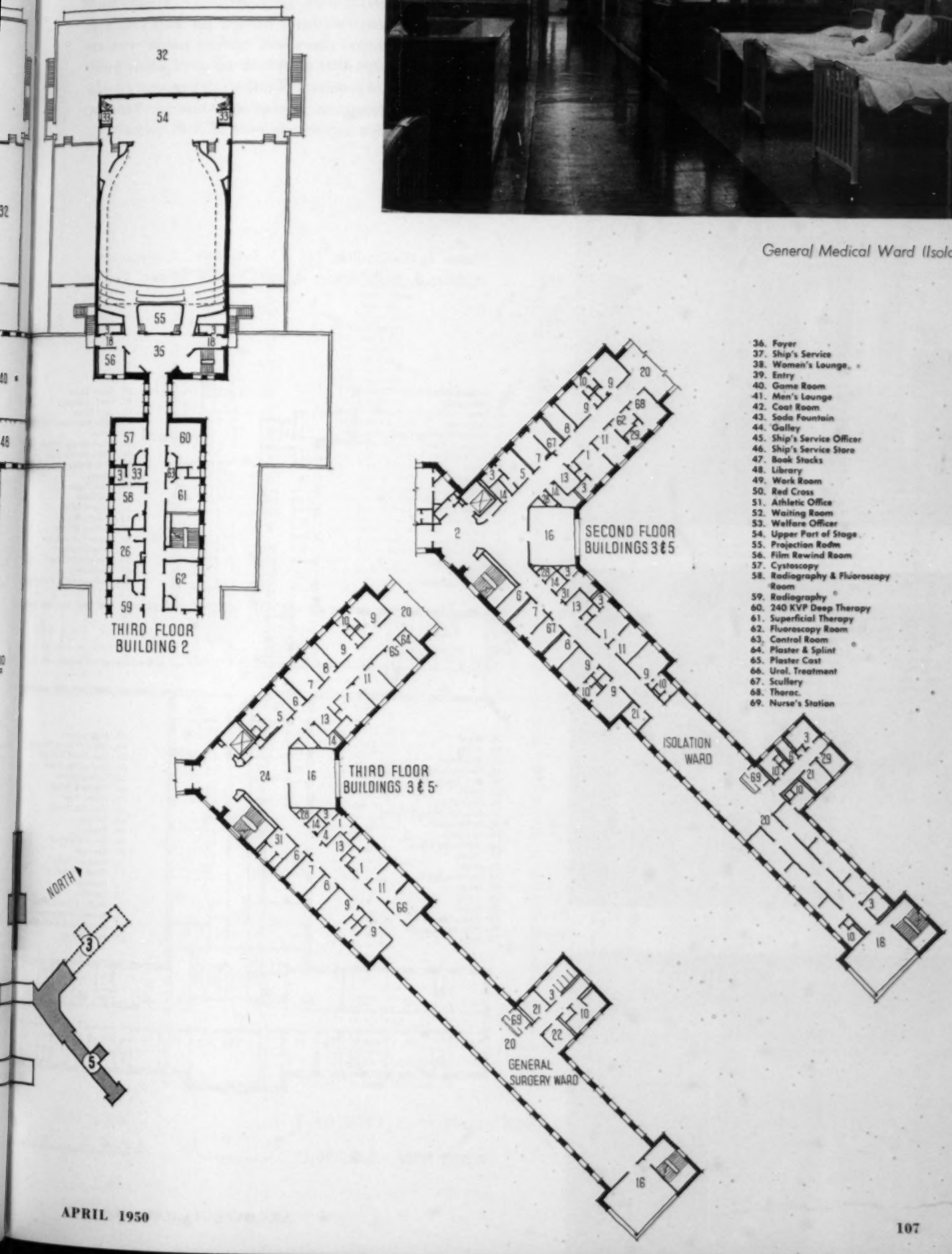
25. Booth
26. Dark Room
27. Eye, Ear, Nose & Throat
28. Soiled Linen
29. Sterilizer
30. Operating Room
31. Waves
32. Roof
33. Dressing Room
34. Stage
35. Lobby





Ward Buildings 3, 4, 5 & 6 contain, in basements, occupational therapy, brig, laundry, storage, mechanical equipment. On fourth floors are solaria and sun decks

General Medical Ward (Isolation)



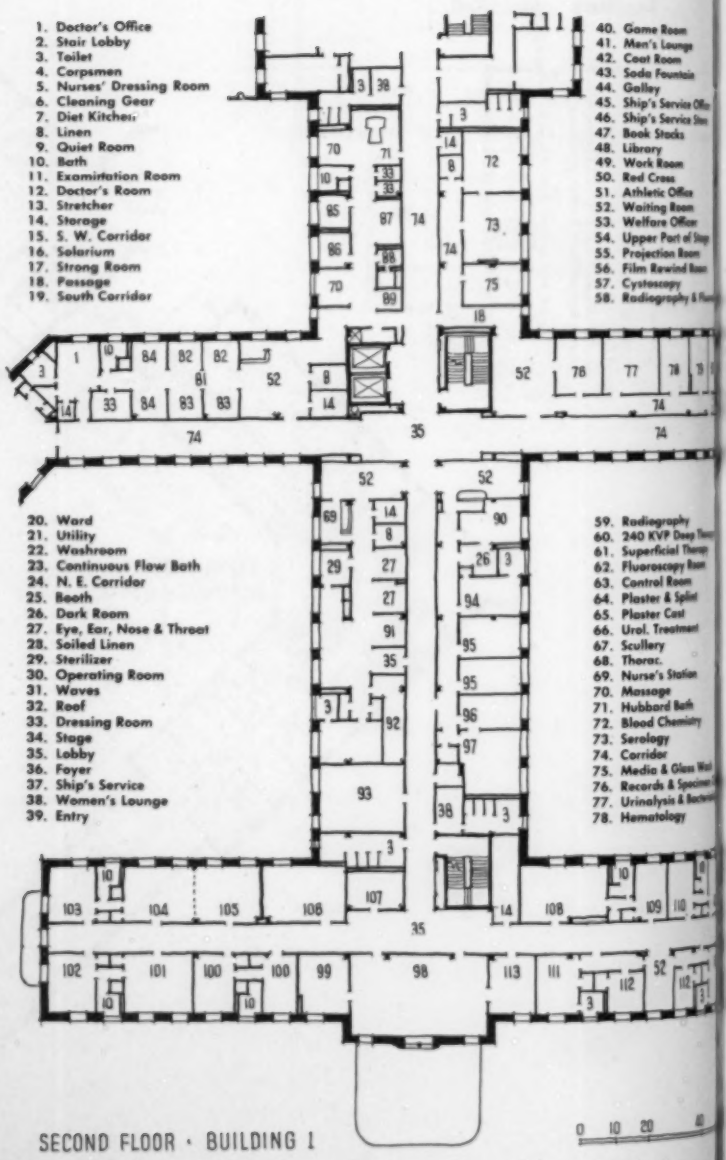
1

The main structure at the Naval Hospital, Beaufort, S. C., is supported by cast-in-place concrete piles on which rest the reinforced concrete basement walls. The superstructure is steel framed, with concrete floors and roof deck. Exterior walls are red face brick with limestone and greenstone trim, backed up with clay tile. Windows, principal doors and exterior metal trim are aluminum, except that steel sash are used where maximum security is required. Windows are mostly double-hung, with aluminum screens and interior Venetian blinds. Detention screens are used in N P spaces.

*Photos: **1**, exterior, Bldg. No. **5** in foreground; **2**, physiotherapy corridor; **3**, hydrotherapy; **4**, corridor, Sick Officers' Quarters*

2

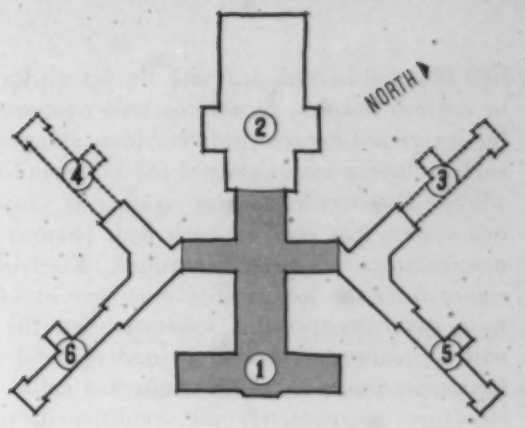
3

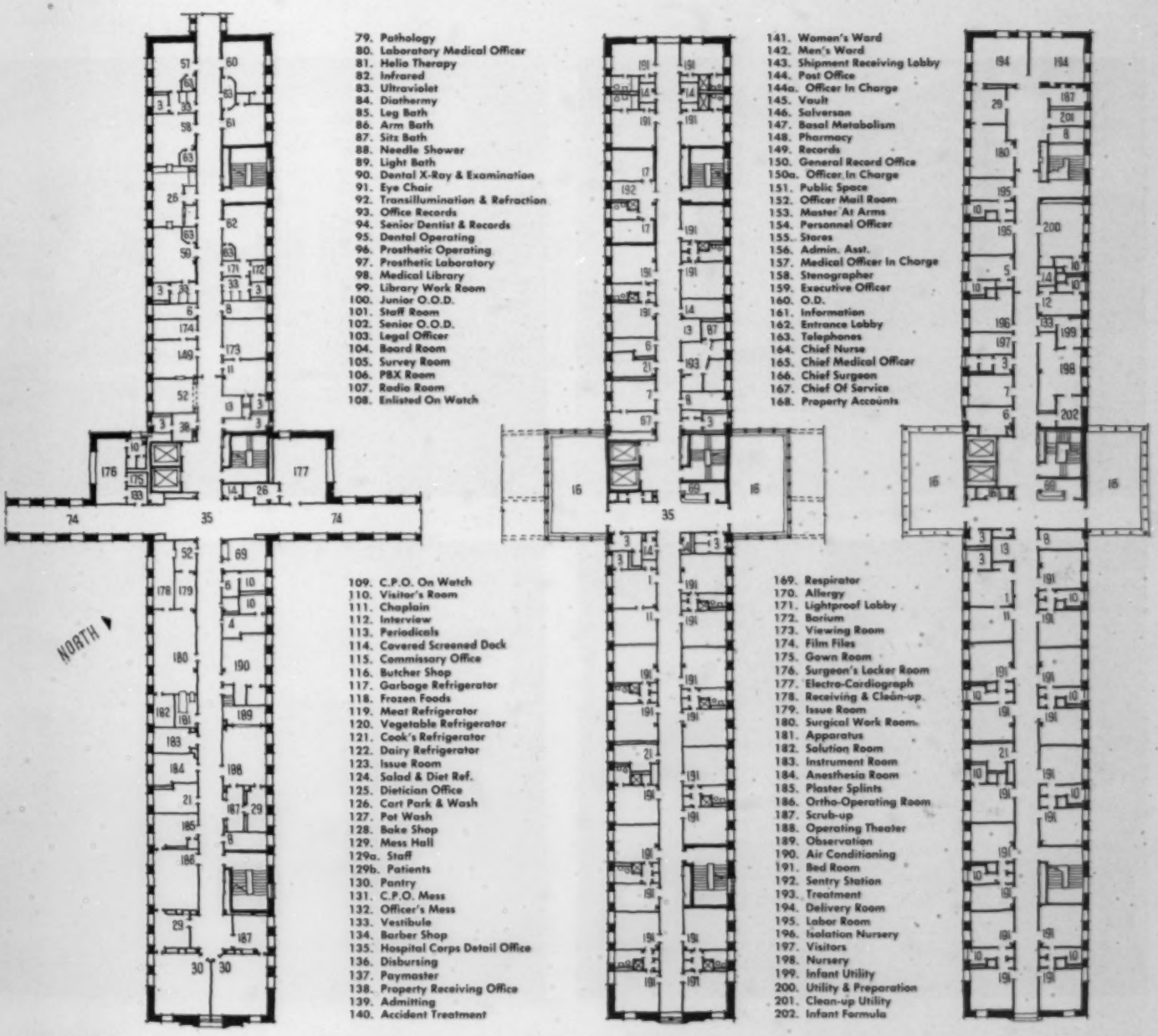


4

SECOND FLOOR · BUILDING 1

Floors are terrazzo in lobby, wards and bedrooms; asphalt tile in offices, laboratories, x-ray rooms, theater, traffic aisle in wards and corridors; ceramic tile in clinics, treatment rooms, etc.; grounded terrazzo in operating and delivery rooms; quarry tile in galley and sun decks. Walls: marble in lobby; plaster in offices, laboratories, bedrooms; birch paneling (walls or wainscots) in private offices, library, staff conference room, auditorium; glazed tile in wards; ceramic tile in clinics, etc. Most ceiling areas are acoustic tile. Extensive use of color contributes greatly to the hospital's cheerfulness and comfort.





79. Pathology
80. Laboratory Medical Officer
81. Helio Therapy
82. Infrared
83. Ultraviolet
84. Diathermy
85. Leg Bath
86. Arm Bath
87. Sitz Bath
88. Needle Shower
89. Light Bath
90. Dental X-Ray & Examination
91. Eye Chair
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93. Office Records
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109. C.P.O. On Watch
110. Visitor's Room
111. Chaplain
112. Interview
113. Periodicals
114. Covered Screened Deck
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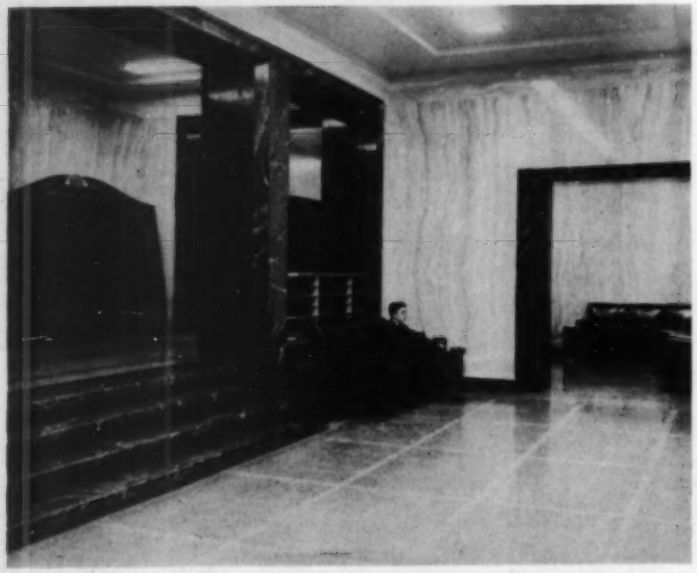
156. Admin. Asst.
157. Medical Officer In Charge
158. Stenographer
159. Executive Officer
160. O.D.
161. Information
162. Entrance Lobby
163. Telephones
164. Chief Nurse
165. Chief Medical Officer
166. Chief Surgeon
167. Chief Of Service
168. Property Accounts

169. Respirator
170. Allergy
171. Lightproof Lobby
172. Barium
173. Viewing Room
174. Film Files
175. Gown Room
176. Surgeon's Locker Room
177. Electro-Cardiograph
178. Receiving & Clean-up
179. Issue Room
180. Surgical Work Room
181. Apparatus
182. Solution Room
183. Instrument Room
184. Anesthesia Room
185. Plaster Splints
186. Ortho-Operating Room
187. Scrub-up
188. Operating Theater
189. Observation
190. Air Conditioning
191. Bed Room
192. Sentry Station
193. Treatment
194. Delivery Room
195. Labor Room
196. Isolation Nursery
197. Visitors
198. Nursery
199. Infant Utility
200. Utility & Preparation
201. Clean-up Utility
202. Infant Formula

THIRD FLOOR BUILDING 1 FOURTH FLOOR BUILDING 1 FIFTH FLOOR BUILDING 1

The hospital is equipped with the latest developments in modern hospital furnishings and equipment. Lighting is recessed fluorescent in corridors and major rooms, surface fluorescent in general offices, incandescent elsewhere. The doctors' paging system is visual; nurses' call system has cord at each bed, buttons in toilets, annunciators at nurses' stations. Electrical service comes from the local utility company at 44,000 volts to a government-owned substation on the property, with primary distribution in underground ducts and feeder circuits in buried lead-covered cable. The main structure is completely air conditioned, winter and summer; Operating Suite has a low-pressure unit, uses 100% outside air, electrostatically filtered. Theater, Mess Hall and Ships' Service have a conventional unit; all other spaces, a high-pressure system. There is a self-contained unit for the Butcher Shop; special refrigeration compressors for storage rooms, for ice-making and for chilling drinking water. The galley has separate mechanical ventilation. The structure has three automatic, self-leveling elevators, one manually operated elevator, and two 3500-lb hydraulic freight elevators. Galley equipment is steam, electric, or oil heated, includes mechanical dishwashers.

Main lobby



Library (crews)

Galley

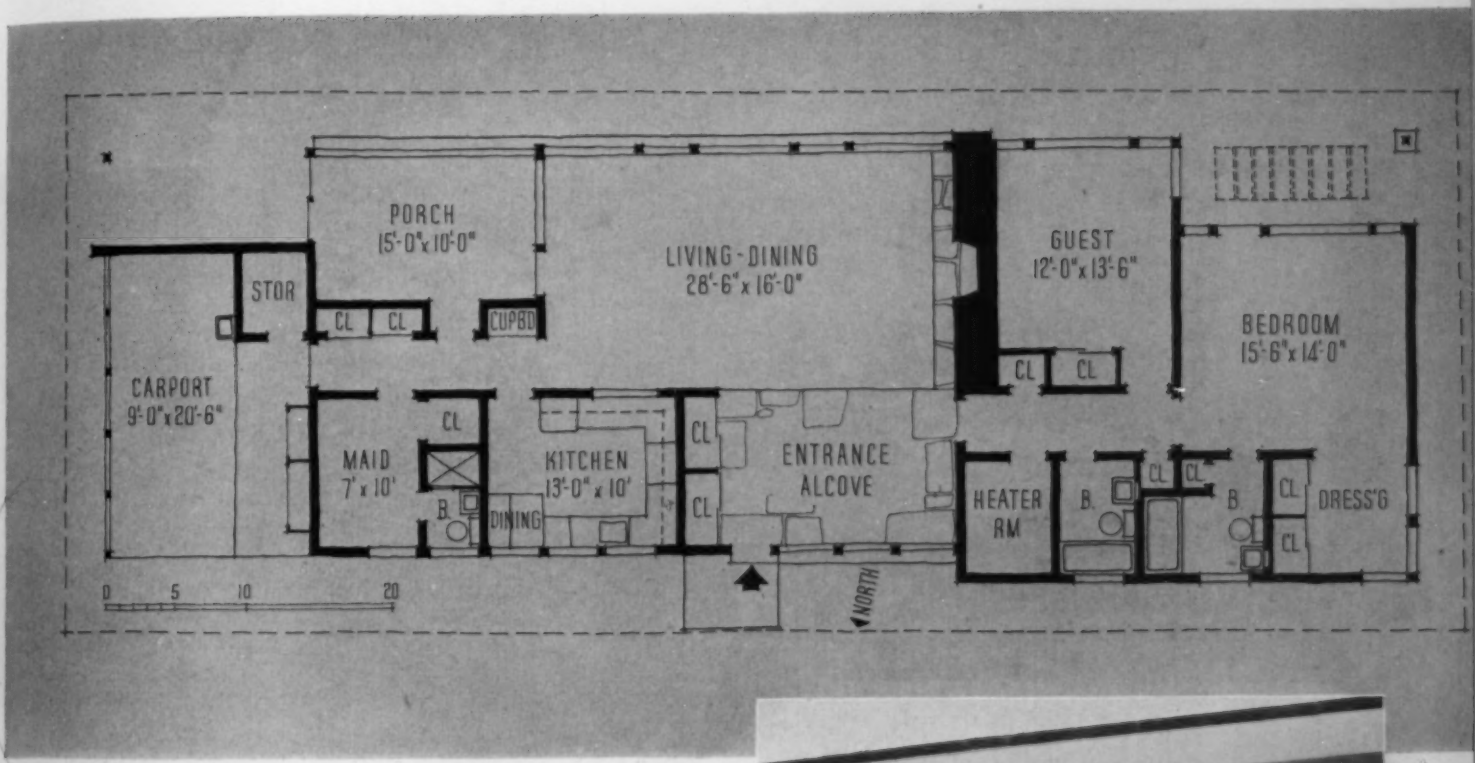
Mess Hall

SUMMER RESIDENCE ON LONG ISLAND SOUND

Residence of Mr. and Mrs. Max Borgenicht, Westport, Connecticut

Cordes, Bartos & Mihnos, Architects

Charles Middeleer, Landscape Architect

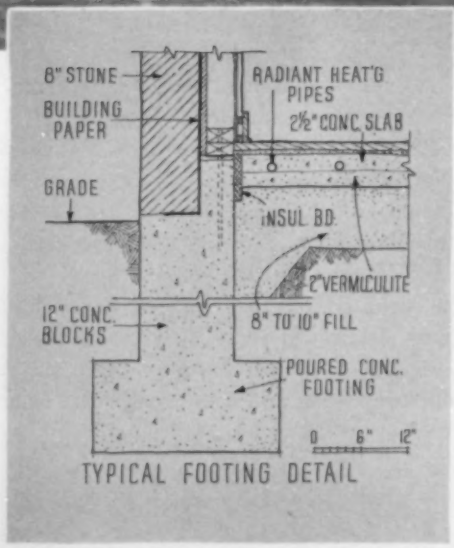


Ben Schnall

THIS HOUSE, say the architects, was designed for a middle-aged couple whose children, three daughters, are married and have children of their own. Hence the two terraces (see photos, next page): the one off the master bedroom provides a quiet retreat for Mr. Borgenicht, away from the grandchildren and the activities of living room and kitchen and the east terrace.

The house is situated on the crest of a low bluff overlooking Long Island Sound. It is primarily for summer and weekend use, but is fully equipped for year-round occupancy when and if desired, with radiant

Ben Schnall



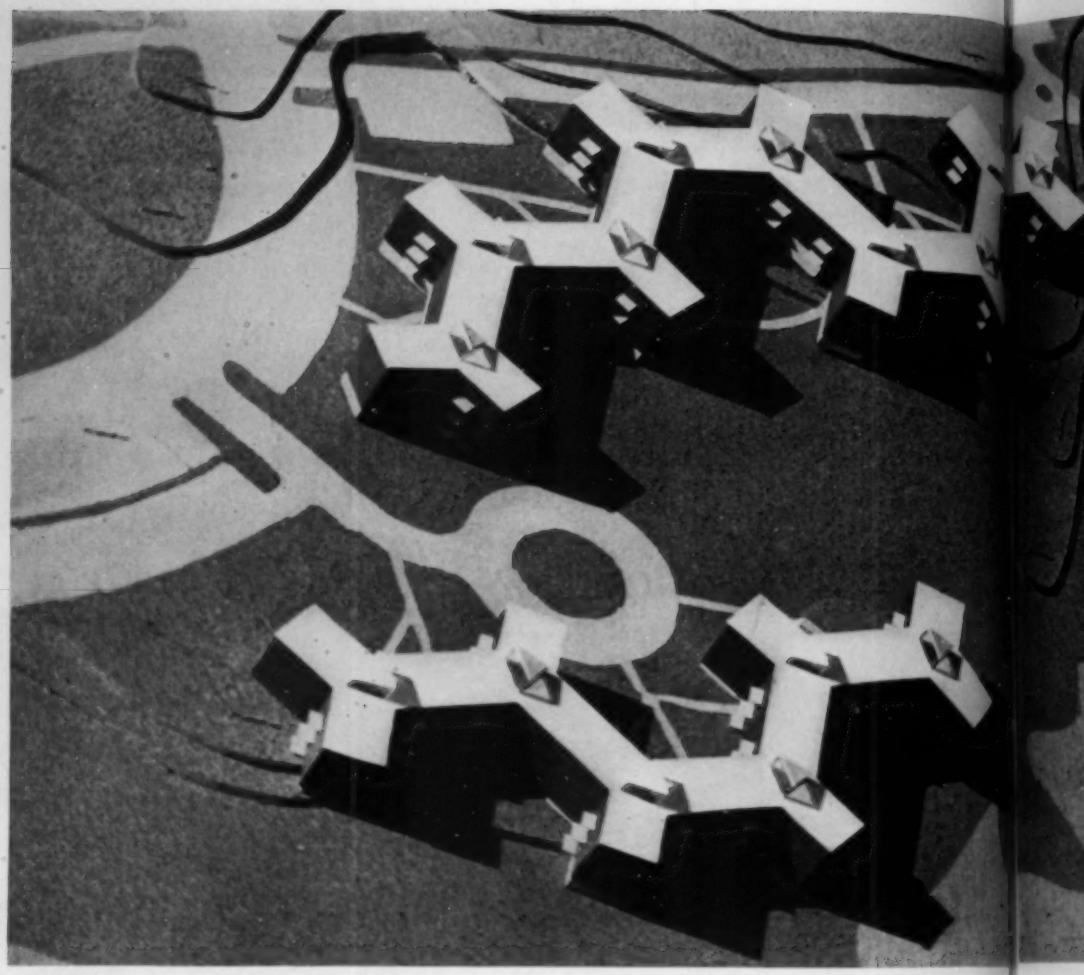
TYPICAL FOOTING DETAIL

Floor slab is of insulating concrete with a lightweight aggregate. Waterproof board insulation prevents heat loss through edge of the slab. Framing is wood; exterior walls are natural finish cypress. Interior walls are plaster and redwood siding

heating throughout. Owners' requirements were: as much through ventilation as possible, particularly in the master bedroom and living area; plenty of closet space; a screened porch readily accessible from the kitchen for the serving of meals; easy housekeeping and maintenance; and wide glass areas to the south to take advantage of the view over the Sound. The screened porch was so located as to permit its future conversion into a separate dining room (heating pipes are in place in the floor slab); the adjoining open terrace would be screened at the time of such conversion.

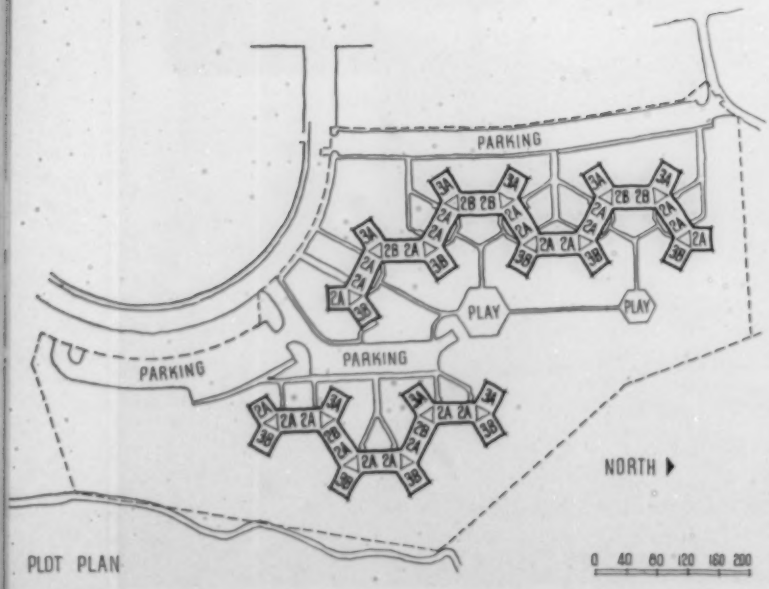
Interiors were designed by the architects, as were the custom built furnishings such as the sofa, hanging desks, dressing table, wall and book cases. Wall case on north wall of living room (opposite and below) has sheet-plastic top

Ben Schnall



Outdoor living is encouraged by balconies and play areas away from traffic. To simplify maintenance, landscaping will consist mainly of large trees in the courts, vines on buildings. Key letters on plan below designate number of bedrooms and entrance location in each unit

DESIGNED FOR PRIVACY AND CONVENIENCE

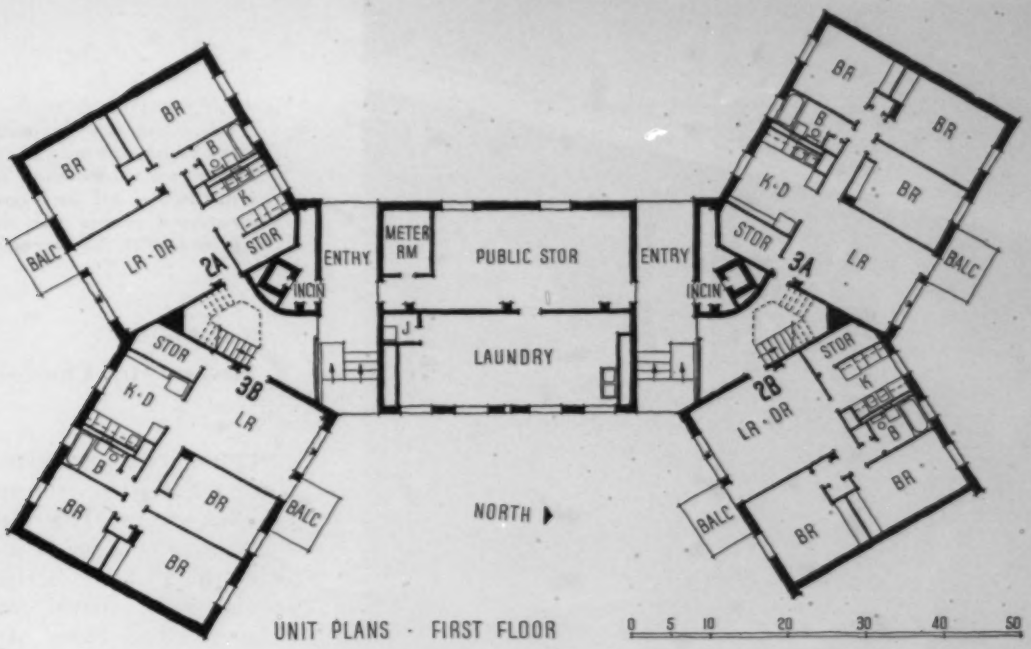


PLOT PLAN

Chelsea Housing Project, Chelsea, Mass.

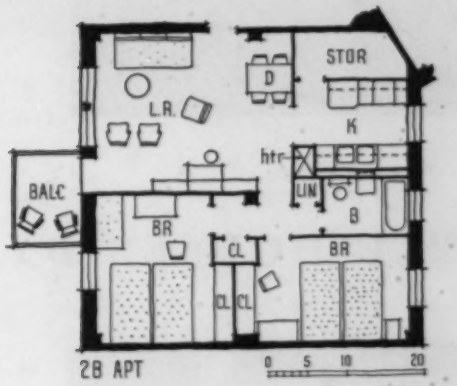
Hugh Stubbins, Jr., Architect

AMENITIES for healthy, private family life are amply and economically provided in this 128 unit state-aided veterans' housing project. The interesting solution employs a triangular stair hall with radiating wings as a basic element. These join to form varied garden courts and give wide views and cross ventilation to each apartment. No unit looks directly at others. Water conditions on site led to elimination of basements, with utility rooms on ground floor. A central plant furnishes hot water to converters in each unit, allowing individual control of heating. Buildings are fireproof with masonry bearing walls, center row of columns and concrete floors. Bids on the project were about $100,000 lower than estimated costs.



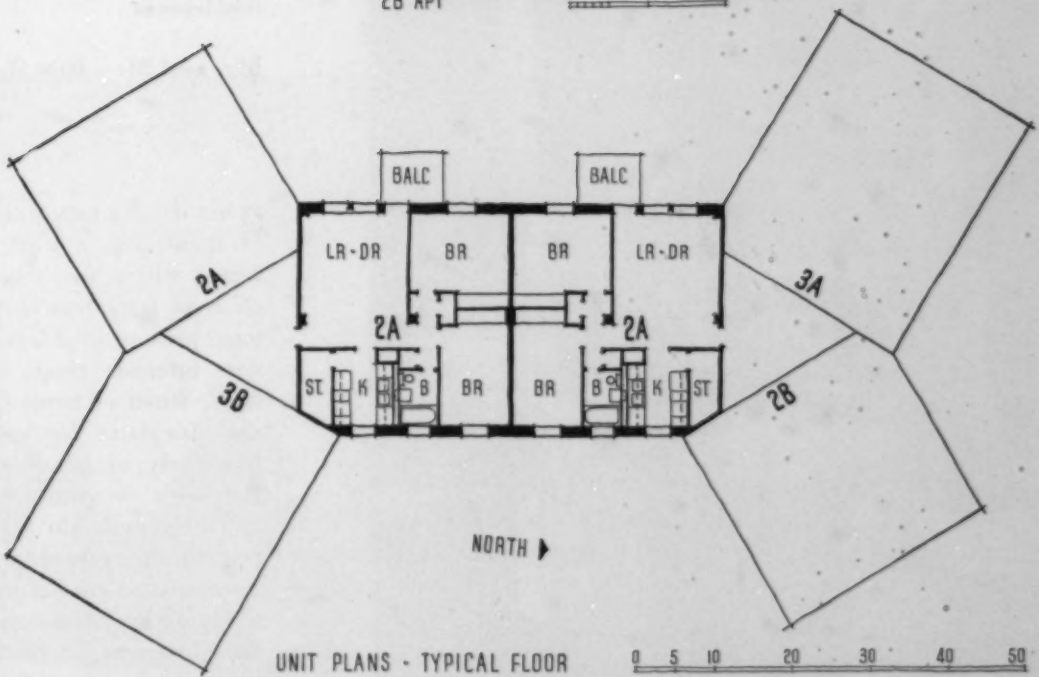
UNIT PLANS - FIRST FLOOR

0 5 10 20 30 40 50



2B APT

0 5 10 20



UNIT PLANS - TYPICAL FLOOR

0 5 10 20 30 40 50

Triangular stair halls give direct access to utility rooms, incinerators and passages leading to parking and play areas. Units have well studied layouts, spaces for crib and storage

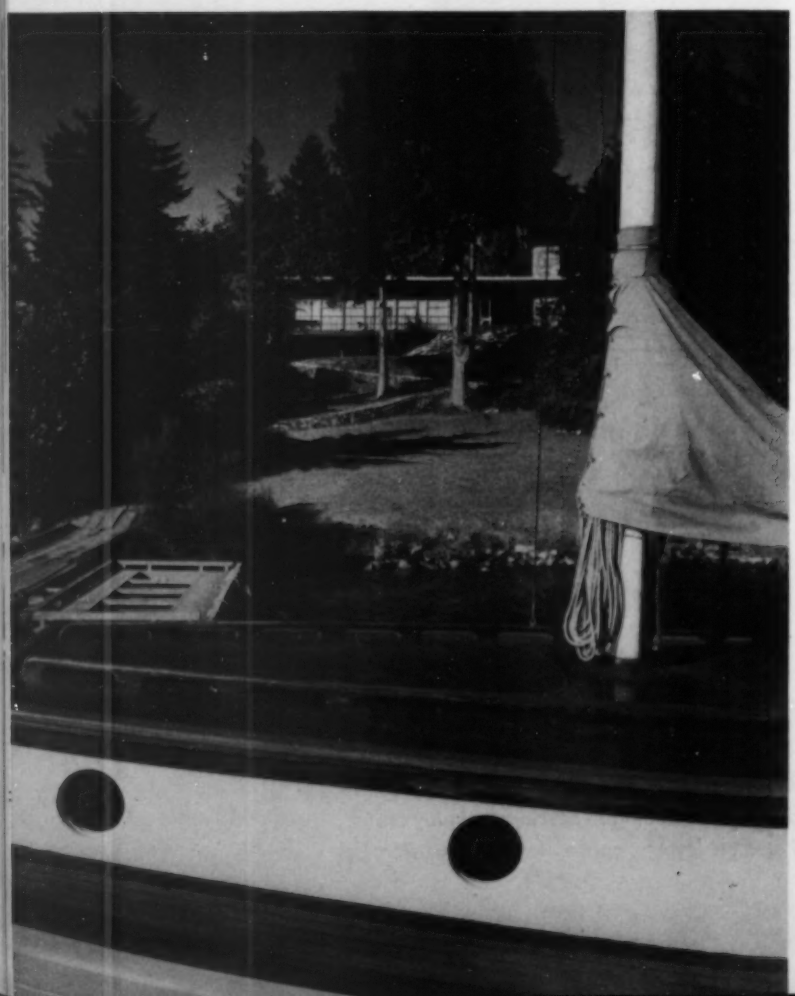
With these two basically dissimilar houses, Architect Paul Thiry has met the common problem of the narrow lot in two uncommon ways. One of the two he spread lengthwise, all but covering the site; the other he stretched across the width of the lot, leaving most of the length for terraces and landscaping.

Residence of

Mr. and Mrs. Charles D. Alhadeff, Seattle, Wash.

THE ALHADEFF RESIDENCE occupies a lot only 40 ft wide — exceptionally narrow for so large a house. It is within Seattle's city limits, fronting on Lake Washington, one block north of the Floating Bridge and only six minutes via traffic tunnel from the owner's downtown office. Since Mrs. Alhadeff wanted all principal rooms on one floor, the zigzag design resulted, the architect explains, from "the effort to obtain the maximum use of the land, to provide outlook plus privacy. . . . Each room looks out at the view or into the sheltered garden and has a seeming independence from the others."

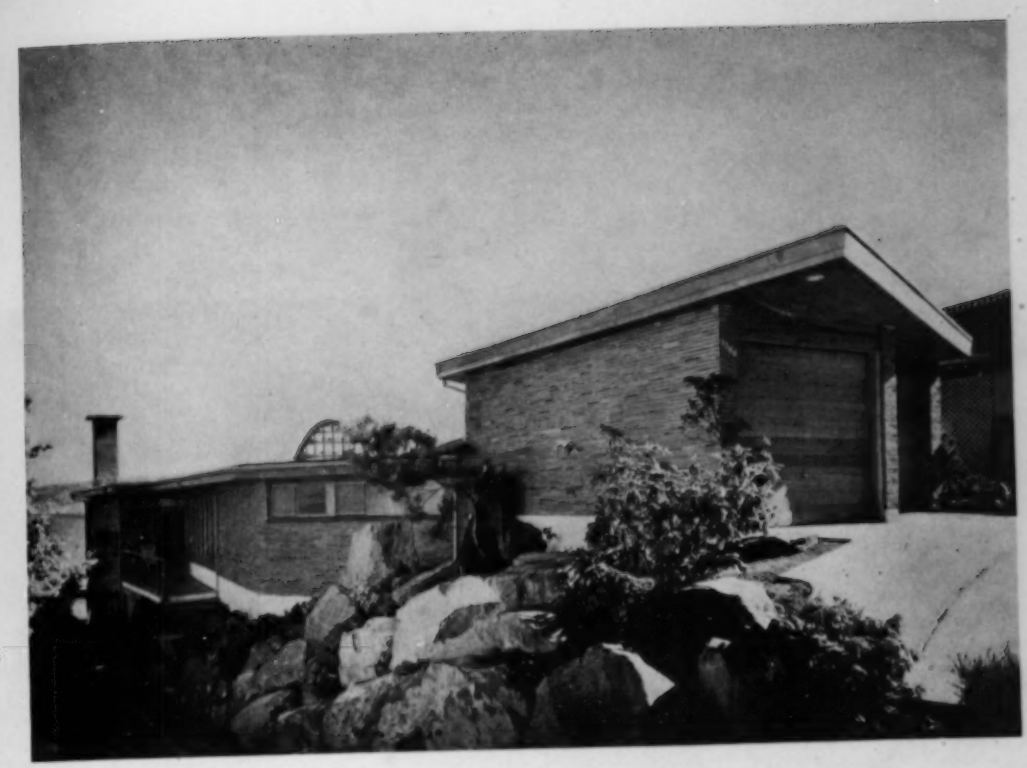
TWO SEATTLE HOUSES BY PAUL THIRY SOLVE N



Residence of

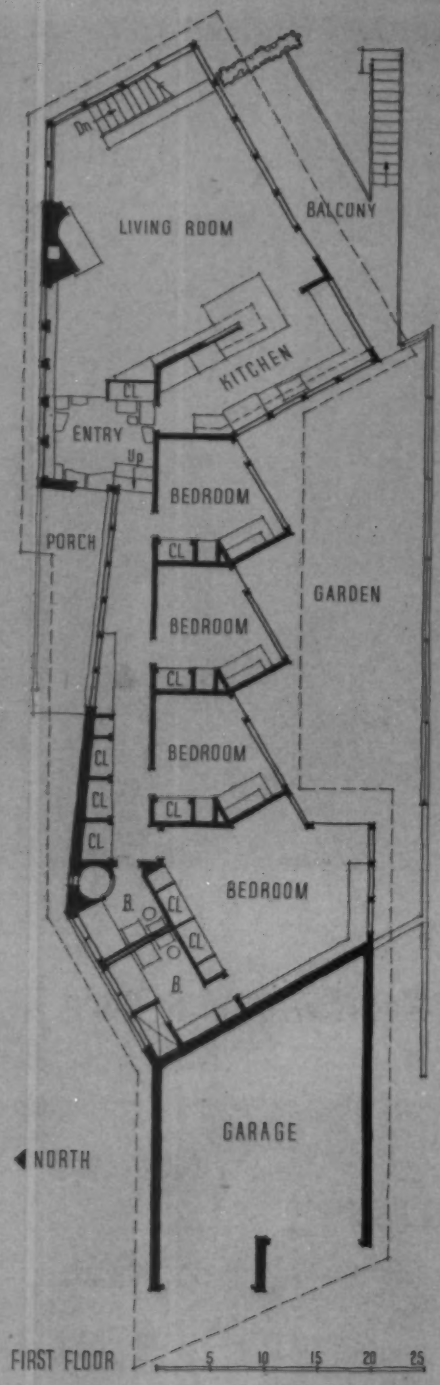
Mr. and Mrs. Roy Halsey, Hunt's Point, Wash.

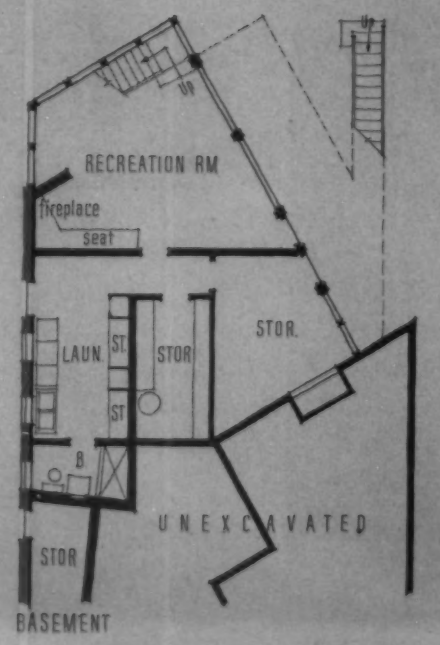
THE HALSEY HOUSE, across the lake at Hunt's Point, has a wider lot — almost 80 ft — across which the house is stretched, cutting off road from waterfront. Mr. Halsey spends long periods in Alaska supervising his business interests there, living then aboard his boat. When at home on Lake Washington he uses his boat for getting about almost as frequently as he does his car, so access to the dock is vitally important. Because he and his family do a lot of large-scale entertaining, the carport was planned as an adjunct to the paved yard onto which the combination living-dining room opens: for large parties the whole area can be thrown into one by opening the gates (not shown on plan, page 122) between yard and carport. A large workshop next to the carport and a workroom beneath the bedrooms are provided for care of boats and gear.



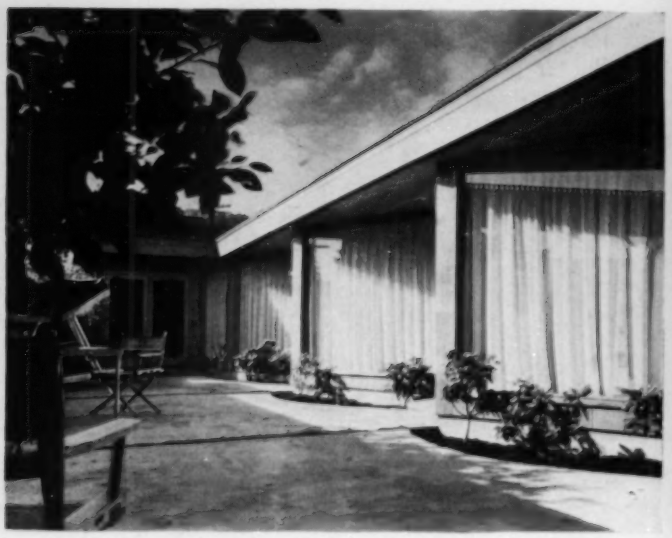
Richard Garrison

NARROW-LOT PROBLEM IN TWO DIFFERENT WAYS





Concrete-paved terrace accessible to all four bedrooms is major feature of Alhadeff house. Louvered screen (both photos across page) is so constructed as to give a view of lake from court and still maintain privacy. Strip windows in background (opposite page, left) are over working area in kitchen. South facade (far right) shows how completely the house is shielded from neighbors

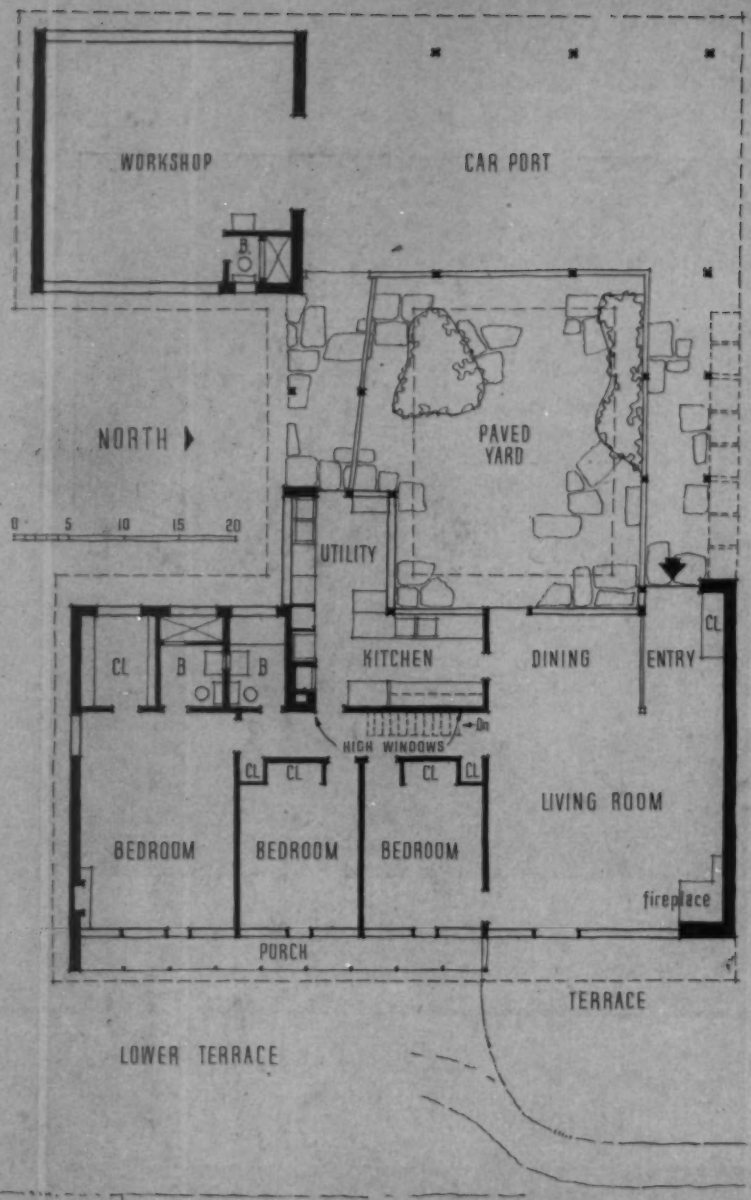


Alhadeff Residence

Halsey Residence

The Halseys have flagstone-paved courtyard, separated from carport and entrance by fence and planting beds. Exterior walls are Douglas fir plywood. Bedrooms and living room (opposite page) face the lake; below them is workroom used to supplement workshop next to carport (next page). Wider margin to property line at south was allowed for carrying boats and gear to shop

Richard Garrison



Alhadeff Residence

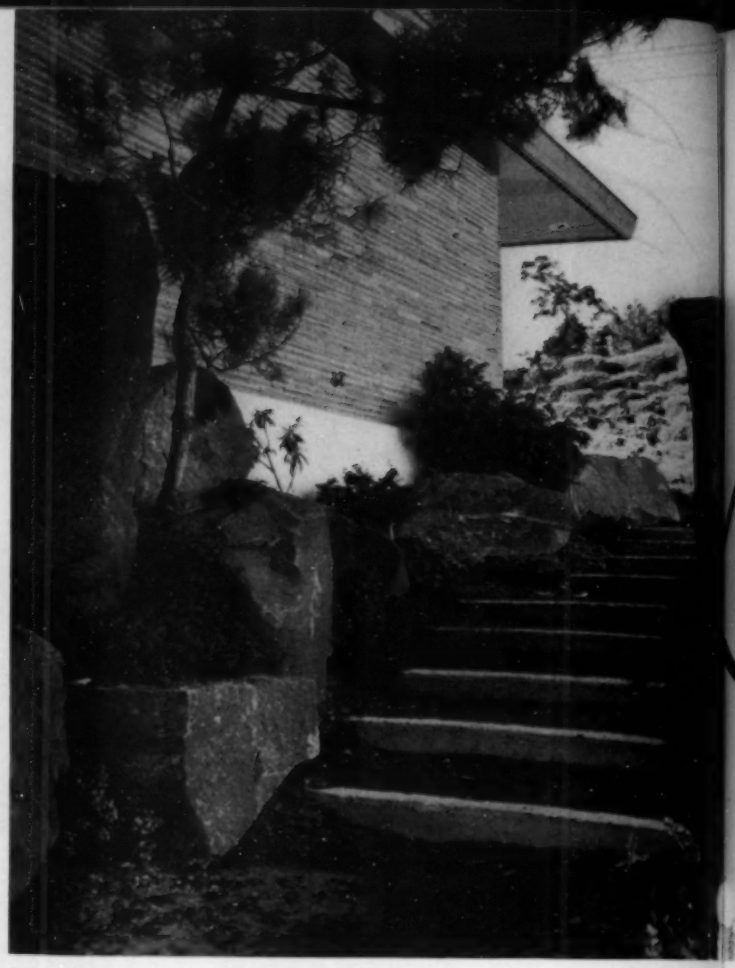
Halsey Residence

Richard Garrison

Alhadeff living room is paneled in birch plywood; fireplace is Roman brick. Random marble floor in kitchen (above) and hall (next page) is relic of fish pool in the retail market originally maintained by Mr. Alhadeff's father. The family-owned market, now grown into a wholesale business national in scope, was in past years one of the show places of Seattle

North wall and corner fireplace of Halsey living room are of reclaimed brick; remaining walls are of African mahogany veneer; floor is asphalt tile. Combined kitchen-utility room has charcoal grill built into chimney from basement furnace

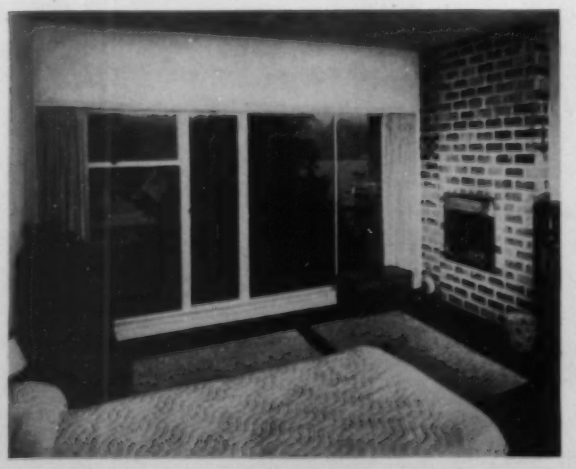
Alhadeff Residence

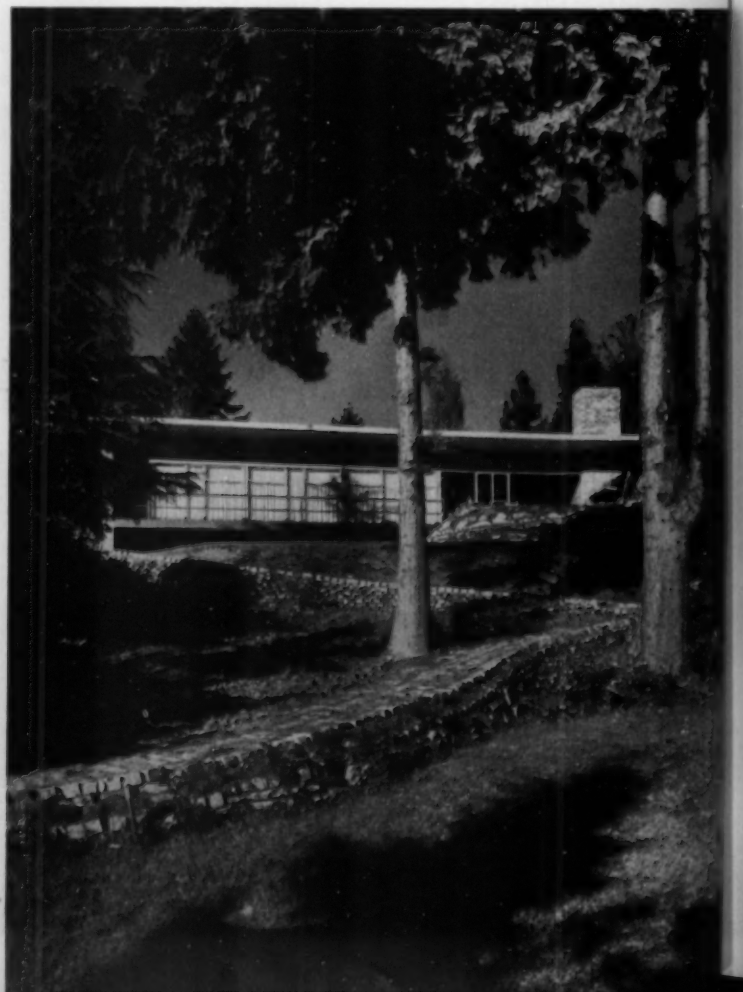


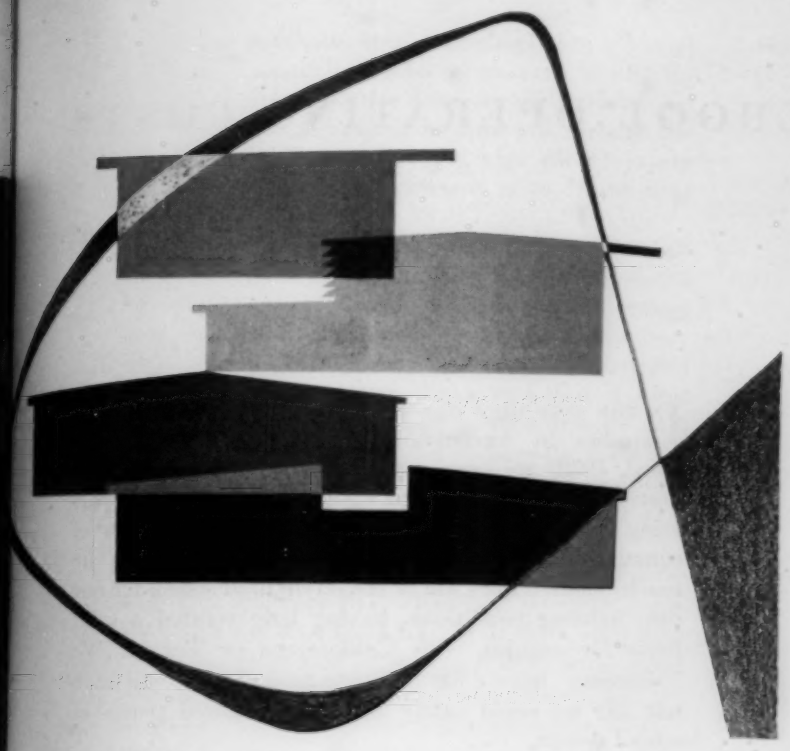
Richard Garrison

Chief difference in the two houses is best shown in the two large photos on this page: the verticality of the Alhadeff residence, marked by the steps leading from street to entrance past the garage; and the horizontality of the Halsey home, characterized by the broad sweep of lawn from lake to terrace.

Halsey Residence







PROTOTYPES FOR LOW-COST SCHOOLS

SEVERAL significant things happened when, several months ago, we began asking architects for their best low-cost schools. For one thing, a deluge broke over us — the RECORD offices soon had school plans stacked in all corners. The prints came accompanied by detailed cost breakdowns, lists of money-saving expedients, diagrams of new plan and construction ideas, pie charts and slide-rule calculations. It was quickly apparent that every architect and his associate had been beating their ingenuity pretty earnestly to design schools for war-born youngsters who were literally going to school in shifts.

The word "prototype" turned up quite frequently — "this school is a prototype for a half dozen we are building this year," or, "a basis for designing the theoretically most economical school for Maine conditions" (Harriman, p. 126). This Building Types Study was done, then, by picking the plums from a rich basket of prototypes.

The schools differ widely. Some architects found economy in plan arrangements, in multi-purpose rooms and corridors, in new classroom shapes. Some in structural simplicity and modular design. Some used bilateral lighting; others designed for artificial lighting. The climatic regionalism of schools is readily seen.

There is eloquent testimony, in the diversity of ideas, of the essential ingenuity of architects when they really tackle the problem of costs. Also, perhaps, a comment on research still to be done.

There is a rightness, too, in this diversity of approach. Nobody expects that from such cost study a single standard school will emerge. Schools, like other buildings, are designed for strictly local needs, for local material supply conditions, for local weather, for local school boards. More and more, for example, are schools designed for adult use — one in this study even houses the township offices.

Everybody, however, has a right to expect good schools. All those here presented are well equipped, well lighted, well planned for modern activity programs. They do not waste money in massive monumentality that might appeal to older taxpayers; if the old folks want to use the school they will just have to get along with a bright and busy gayety put there for the youngsters. — *Emerson Goble*

ARCHITECTURAL RECORD'S BUILDING TYPES STUDY NUMBER 160

A DESIGN STUDY: SCHOOL OPERATING COSTS

*By Alonzo J. Harriman**

The author here completes his school cost studies, as promised in these pages a year ago, and develops the results in a "prototype" school theoretically most economical for Maine. This part of the study adds operating and maintenance factors to his earlier comparisons of structural systems and plan types. He makes no claims as to comprehensiveness of comparisons, or application to other localities. This is an individual study of design factors needing local evaluation, and dollar and cents figures are used only comparatively. Readers are urged to try out the methods developed by the Harriman firm, when similar questions must be brought into focus for a specific community.

Fig. 1. *HEATING COSTS—WALL TYPES*

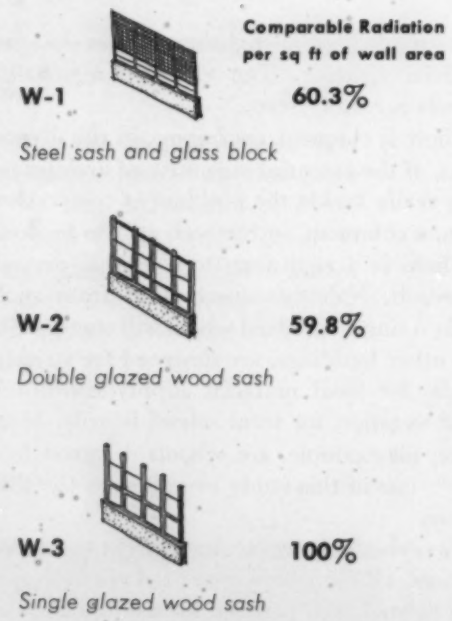
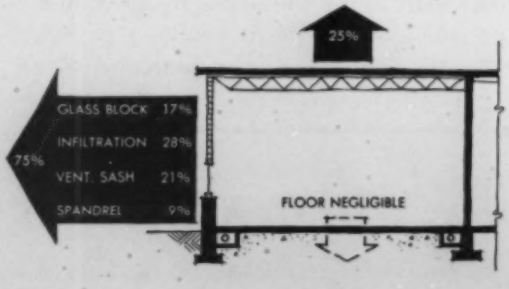


Fig. 2. *HEAT LOSSES FROM TYPICAL CLASSROOM*



IN THE year since our office started these school cost studies in ARCHITECTURAL RECORD (March and April, 1949) we have continued our researches by investigating various design factors as they affect operating and maintenance costs as well as first costs of construction. We have also satisfied ourselves on the much-debated question of the daylighted school for our own lighting conditions, having long wanted a solid basis for arguing with Californians or Texans. We "Mainiacs" have a hard climate to deal with, and have not felt we could safely accept generalized tenets of school design.

So we have analyzed, both with slide rules and with observations in existing schools, such questions as: How much glass? What type of wall and roof construction for heating economy? What kind of lighting? The results, coupled with earlier studies of plan types, have given us a basis for designing the theoretically most economical school for Maine conditions, considering maintenance as well as first cost.

Actually we present here two "prototype" schools. One is strictly of the slide-rule, or engineering type; this is called type R (R for regional). The second is the more finished application, the real prototype; it is called K-8 (kindergarten and 8 classrooms) (page 131).

Construction and Heat Losses

These studies of heat losses directly continue the earlier studies of the wall and roof types most economical as to construction costs. The wall types, W-1, W-2, W-3, are the same as in the earlier articles; so are the roof types, R-1 to R-5.

Fig. 1 illustrates these different wall types and the calculated relative heat losses. The W-3, the single glazed, we have used as 100 per cent. The heat loss from the combination wall of glass block and steel framework and steel sash is 60.3 per cent of this, and the heat loss from the double glazed one, using two wood sash to our detail, is 59.8 per cent of this base.

Of the total heat loss from a one-story semi-fireproof classroom, 52,000 Btu, 75 per cent is lost through the wall (see Fig. 2). This heat loss does not include, however, any loss due to ventilation. Ventilation we have considered as a use loss, not chargeable to the building efficiency.

* *Alonzo J. Harriman, Inc., Architects-Engineers, Auburn, Maine*

If the design heat loss through single glazing is 32,950 Btu, it is economical to double glaze even at the increased cost of approximately $324, for there is a saving of 13,225 Btu or 25 per cent of the heat loss through the single glass. In dollars and cents, this $36.30 yearly saving in the heating of a classroom is an 11 per cent return on the investment.

Fig. 3 shows the direct transmission losses through the roof for different roof types, R-1, R-2, R-3, R-4 and R-5. The studies indicate that R-1, which is the most economical to build, is also the most economical in heat loss. This is due to the fact that in this type construction we can use a fluffy insulation of the batt type or loose fill in place of the rigid insulation applied directly onto a flat roof boarding. R-2, R-3 and R-4 are the same due to the similar type of roof construction. R-5 is a little less efficient, due to the fact that it has a concrete slab in place of wood plank.

For saving in heating then, we would use wall construction W-2 and roof R-1. There are, however, other advantages to the glass block wall W-1. With visor over clear glass we have had satisfactory light with direct sunshine on the wall without blinds or screens, but the new blocks do have a very low surface brightness.

Plan Types and Heating

Fig. 4 shows the over-all heating results of our various types of schools indicated in the earlier article — type S-2, two-story semi-fireproof; S-1, one-story semi-fireproof; and C-1, one-story combustible.

Note that in the figures for heating, no lights, no pupil content, and no sun heat gains have been considered.

It is again noted that type C-1, the one-story with the combustible roof, is the most efficient, as far as heat loss goes, of them all. Again the reason is the ability to put in fluffed insulation economically in the roof space. That is the only difference between this type and the one-story semi-fireproof. However, change to double glazing in place of glass block and steel sash, and there would be a further saving.

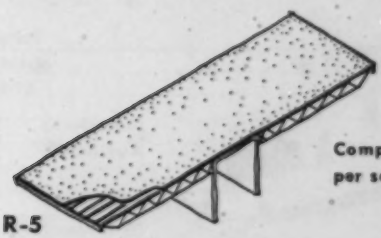
It is interesting to note, in the above figures, that the heat loss through the roof, which would be approximately 25 per cent of the total heat from the building, is more than offset by the heat loss from the auxiliary spaces. In other words, the heat loss from the corridor ends, from the stair-halls and toilets, is more than enough to offset the heat loss through approximately twice the roof area. This, I must say, is contrary to what we expected.

It develops, therefore, that although the heat loss of the two-story classroom itself is less, the over-all loss is greater than for the one-story building. And with the more economical combustible roof, we would have a still more economical building as far as heat loss goes. It is most interesting to note that the most economical building to construct is also the most economical to heat.

How About the Daylighted School?

It is frequently said that north light is the ideal lighting for a classroom in any climate. Also that a

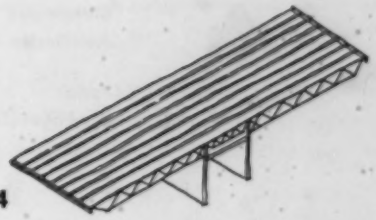
Fig. 3. *HEATING COSTS—ROOF TYPES*



Comparable Radiation per sq ft of floor area

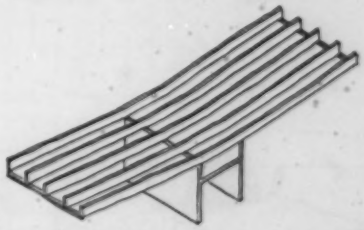
R-5 **100%**

Open-web steel joists, 2½-in. concrete slab; lath and plaster ceiling, rigid insulation



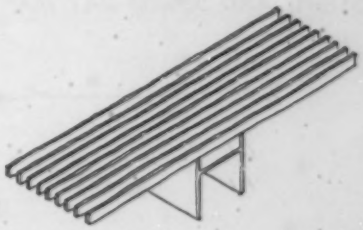
R-4 **88.9%**

Open-web steel joists, 24 in. o.c., with 2 by 4 wood nailers for sheathing; gypsum board ceiling strapped to joists, rigid insulation



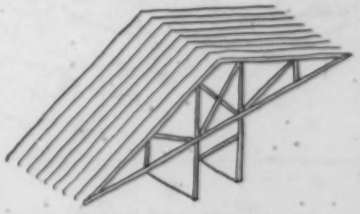
R-3 **88.9%**

Dihedral type, wood mill-frame construction, timbers 48 in. o.c., 2 by 4 wood nailers; structure exposed, painted; rigid insulation



R-2 **88.9%**

Wood joists, 24 in. o.c.; matched wood sheathing ceiling strapped to bottom of joists, gypsum board, painted; rigid insulation



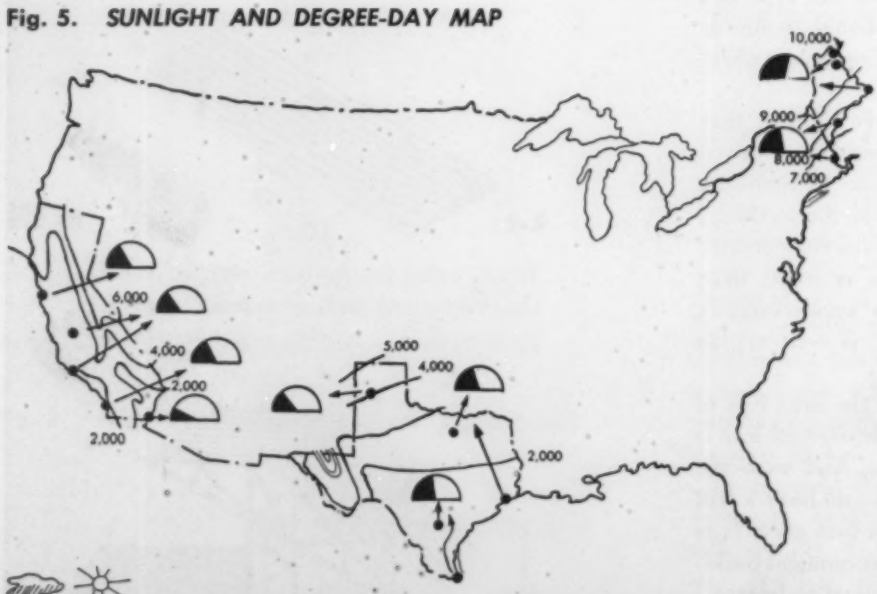
R-1 **33%**

Pitched type, light wood trusses 24 in. o.c.; ceiling strapped to joists, gypsum board, painted; 4-in. mineral wool insulation

Fig. 4. ***HEATING COSTS—BUILDING TYPES***

	Total Design Heat Loss in BTU per hr.
S-1	
Classrooms	549,000
Auxiliaries	186,000
Total	735,000
% of base (S-2)	91%
C-1	
Classrooms	434,000
Auxiliaries	146,000
Total	580,000
% of base (S-2)	71.8%
S-2	
Classrooms	502,000
Auxiliaries	306,000
Total	808,000
% of base	100%
R	
Classrooms	285,000
Auxiliaries	134,000
Total	419,000
% of base (S-2)	52%

Fig. 5. ***SUNLIGHT AND DEGREE-DAY MAP***



Cloudy and sunlight proportion of daylight hours during normal school year

9,000 Lines of equal degree-days per year

classroom suitable for Texas or California is equally good for Maine. With this we have always disagreed. We have not, however, always had the necessary facts to back up the Maine side of the debate. The old argument has at least had the constructive result of goading us into assembling some concrete data.

We have considered the effect of temperature, ventilation, natural light and sun on the schoolhouse design for climatic conditions shown in Fig. 5; the effect of snow, which covers the ground half of the school year; and the reaction of various teachers and superintendents for whom we have built schools recently.

In surveying recent schools that we have done, we found that *every* teacher wanted sun in her classroom at some time during the day. They all preferred sunny classrooms; some asked for south exposure but were satisfied with east and west, east preferred. It seems that on a west exposure, there are a few weeks during the year, both in spring and in fall, when the west sun, shining into the room, overheats the room to some extent. However, this was not too serious a complaint. Teachers would much rather have this than not to have any sun at all during the winter months. I think this west overheating can be very well taken care of in this climate by putting a deciduous tree screen to the west of the classrooms, as indicated in our K-8 school.

We also tried designing a school for natural light, but observations indicate that natural light is not sufficient for good classroom lighting much over half the time, that is, without some strong measures in the way of clerestories. We have not been able to get from the Weather Bureau the sky dome brightness and a definite reading as to the amount of sky light for various days. However, the Weather Bureau has recently put in a type of apparatus that will continuously register the amount of light each day and the intensity of the light at any period during the day. Their findings will be of great advantage to us in the future.

We have, however, been able to observe daylighting in an addition to our office. This addition was the size of one half of a 30 by 30 ft classroom, or 15 by 30 ft. The area of glass is 46 per cent of the floor area. It is not designed exactly like one half of a classroom, but is very similar. It has awning type roof projection over the windows to the south and sunboards over the windows to the east and west.

We started experimenting in this room, taking light readings on various overcast days. From these readings we found definitely that there were certain days in this climate when it was impossible to light a classroom with daylight. As a result, also, we question the sunboards.

With this in mind, we took readings in our several schools in varying overcast weather. These are given in the graphs in Figure 6.

Note that in the upper graph only about half of the classroom is satisfactorily lighted with a 1200-foot-candle sky. Notice that on a 400-foot-candle sky none of the classroom is well lighted. This is not changed much by a snow cover. Graph 2, Curve B, shows that for a 700-foot-candle sky, only at one point is the room satisfactorily lighted. This is with a snow cover. Curve A, however, shows most of the room satisfactorily lighted. This was a clear glass window.

On overcast days sunboards and awnings of various types were very detrimental to the reading in the classroom, although advantageous on sunny days. We also found that, on overcast days, clear glass was better for the classrooms than glass block, though here again we must remember the glare of bright days. Also that a sloping ceiling was of considerable help.

Observations indicated that lights were as apt to be left on continuously as not to have been put on at all when the necessity arose for artificial lighting, or vice versa.

The figures that we got for classroom readings were corroborated by information supplied by the glass block manufacturer, for the intensity of sky dome for which we were taking readings. It is simply a matter of what weather conditions set the pattern for design. It is, of course, possible to augment our unilateral lighting by bilateral lighting. Bilateral lighting, however, generally does away with the double loaded corridor, which means a more expensive school.

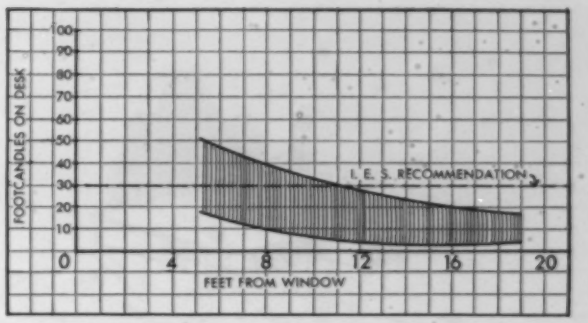
Daylight Proves Expensive

Another lighting experiment involves a high school in Easton, Maine, which was designed with a clerestory. A section of this school is shown in Fig. 7. However, the price was more than the community could afford, so we had to re-design it without the clerestory. We found that on clear days we got approximately the same amount of light in the back of the classroom (with glass block) that we would have had with a clerestory.

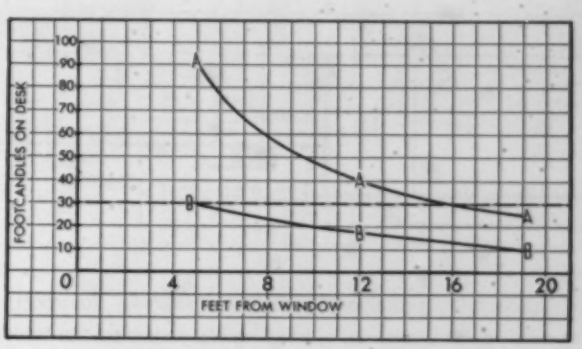
We built a mock-up of this clerestory section and experimented with light, and were convinced that the light was equivalent at least to the requirements. However, in re-designing this school, omitting the clerestory and putting in a flat roof and glass block, unilaterally lighted, and cutting down our heat losses too, we saved approximately $1 a sq ft, or a 10 per cent saving in the cost of the building.

Finally, there is the fact that our readings and those of the Weather Bureau show that the number of overcast days runs at least 45 per cent. We have to face the fact and design a classroom for artificial illumination, with at least part of it to be artificially illuminated all of the time. It looks as if we were just getting around to what is already a well marked trend in factory design — elimination of sawtooth roofs in favor of artificial lighting, with open windows for psychological effect.

Fig. 6. *RANGE OF LIGHT READINGS ON CLOUDY DAYS*

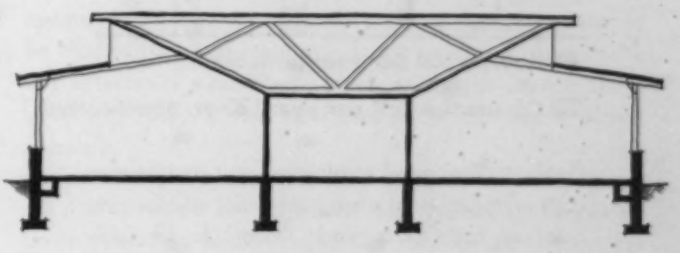


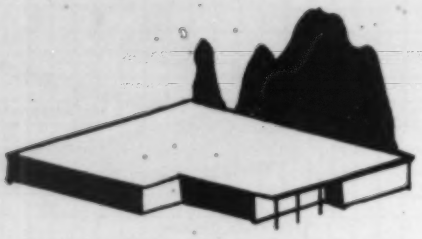
Graph 1: Upper curve, glass block over vision strip 1200-ft-candle sky, snow cover; lower curve, similar room, 400-ft-candle sky, no snow

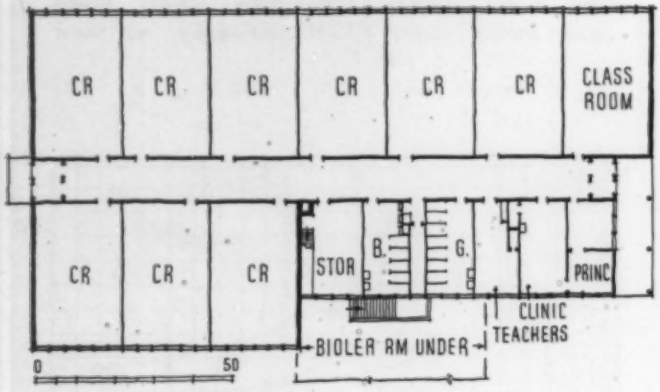


Graph 2: Comparison of light readings with and without sun glare protection; Curve A, wood sash, no sun visor, 700-ft-candle sky, snow cover; Curve B, glass block and vision strip, equivalent sky

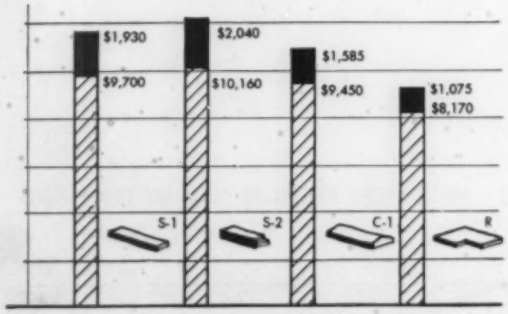
Fig. 7. *PROPOSED SECTION FOR DAYLIGHTING*







The "slide rule" prototype school uses the deep classroom, to save outside wall, previous studies having indicated the savings possible by pushing outside walls apart. It has double-glazed side walls, flat roof design for easy installation of insulation



Final calculations of construction cost and heating costs in annual terms show substantial savings over types of buildings already thought to be fairly economical. In the test run, the R school won by a wide margin. The basic scheme is developed farther in the final "K-8" (opposite page)

A "Slide Rule" Prototype

The foregoing studies and previous articles indicate that the most efficient building for our Maine climate is the one-story building. It is much more efficient in construction costs, with a saving of about 7 per cent. It is also more efficient to heat.

This "R-type" building would also, of course, make for savings in janitorial service, having only two toilets to clean and maintain, while in the two-story there are four. Also, the net area of the one-story is less by approximately 16 per cent, which means 16 per cent less janitoring. This is true, even though they are of identical construction. Also, of course, stairs are one of the hardest things to clean.

From our previous studies we found that if we increased the span in the classroom we decreased the cost per square foot. The farther we pushed the outside walls apart, and diluted their cost, the less the building cost per square foot. We therefore thought that if we changed our classroom so that the end was the outside wall and the length the depth, we would be saving something. We also felt that by designing a classroom this way, we could light the interior artificially all the time for activities which might just as well, if not better, be carried on under artificial light. Also by cutting the exposure of the exterior wall by one-third, we cut down a large amount of heat loss. Of course, shortening the classroom also shortens the corridor a corresponding amount.

The deep classrooms caused a change in roof design, the building being too wide for the pitched roof. For this school we would use long-span steel joists and plank roof, with 2 by 6 ceiling joists. With this we could use the batt type insulation about as easily as in the pitched roof. The wall would be the W-2 type with double glazing.

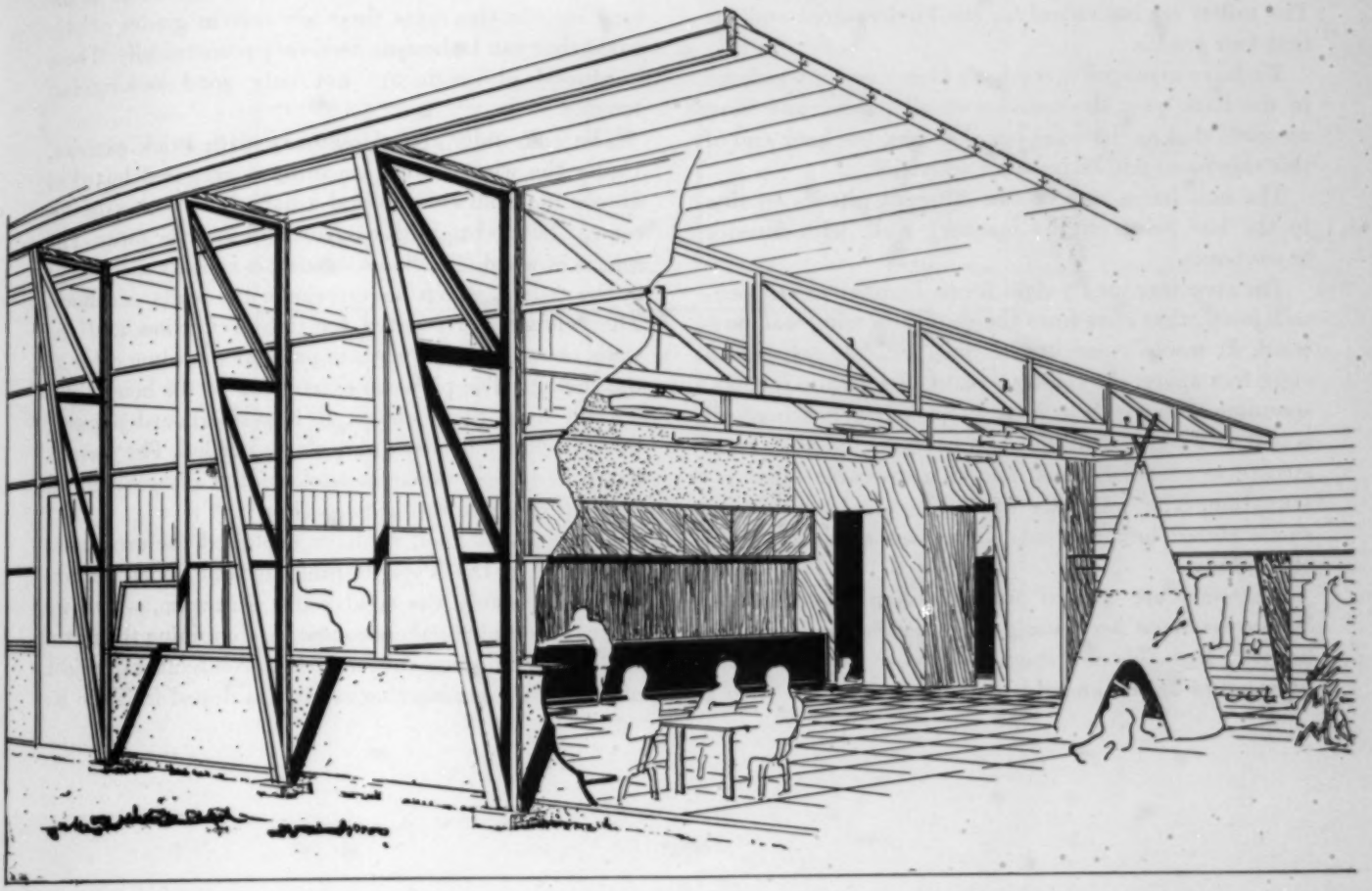
In conclusion, this R type school (using the same unit prices) reduced the cost by 19.8 per cent over our S-2 school, or $40,300; 16.2 per cent over our S-1 school or $31,400; 7.3 per cent over our C-1 school or $26,000.

It also has a saving in heat loss and, therefore, in annual heating cost. There would be a saving of approximately $965 a year in fuel for this building, or approximately 48.3 per cent of the total cost of heating the two-story building, or a saving of 32 per cent or $510 over the one-story building.

New Codes for New Schools

It would be far better to build more new schools, and junk some of the old, even though the standards are not as high as we desire.

We realize that there are certain things in this design that the laws will not now allow us to do. The classroom height must be one-half the width in certain states, and possibly there are many other requirements that this school will not meet. Perhaps, however, logic will help change some of the codes.



PROTOTYPE SCHOOL BORN OF RESEARCH

By Alonzo J. Harriman

THIS "K-8" school is in effect the summation of all of our cost studies. It is designed to put the results into a workable "prototype" school that will be economical in maintenance as well as first cost. The K-8 means kindergarten and eight grades, in a school to house from 250 to 300 students in the typical Maine community.

Classrooms are designed for 100 per cent use of artificial light in the inner half of the room. The outer end will be naturally lighted, but will be supplemented even there by artificial light, so that at all time seeing conditions will be good.

The building runs north and south, the kindergarten having south and east exposure. West classrooms would be shaded by a screen of deciduous trees to keep out the hot afternoon sun. These trees, of course, shade them in spring and fall, but in winter allow the sun to shine through.

The activity space acts as a corridor to save space. All the services are together, and toilets in excess of those necessary in the rooms are located off the activities space, so that they can be readily used by the children during playtime both indoors and outdoors. The storage space off the activities room is for play

yard material, and for material used in the playroom. The toilets are individual for the kindergarten and the first four grades.

We have arranged a teacher's closet and a wardrobe in the back near the corridor in all rooms, and have assumed that as shown in our sketches, the back end of this classroom will be used for activities.

The unit has a roof of two different pitches coming to the low point on the masonry wall, with interior downspouts.

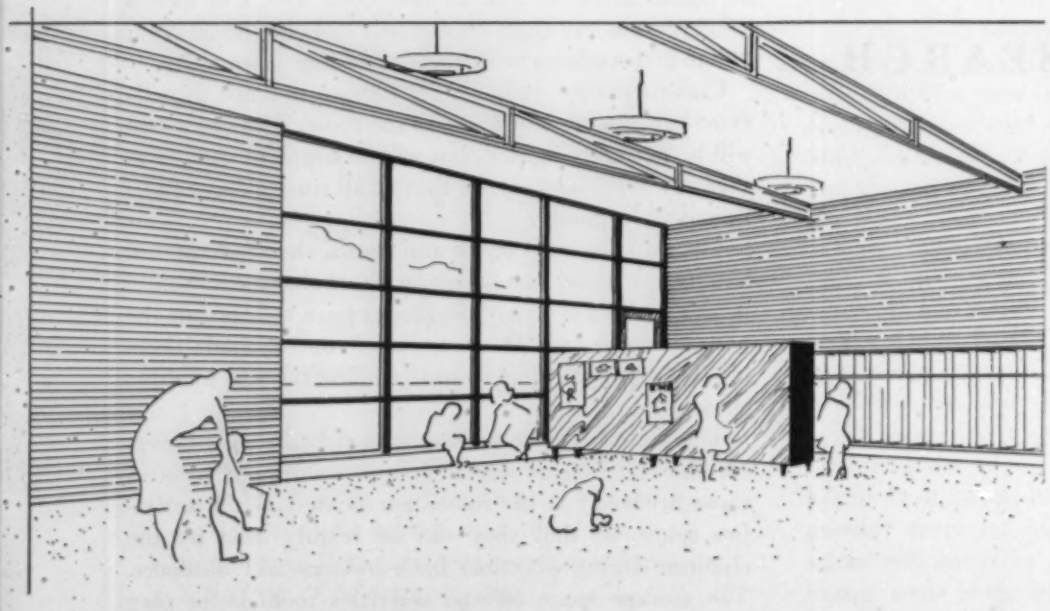
The structure uses a rigid frame (similar to an open-web joist), that runs from the central bearing wall outward. It would come in one unit. Frames are spaced eight feet apart; the ceiling is planked with 3-in. planks, spanning between these joists. The central bearing wall is of 8 by 8 terra cotta tile, load bearing, and aside from structural considerations, effects a desirable noise attenuation. The walls are of double glazed sash with single glazed hopper vents. They are all glazed with clear glass.

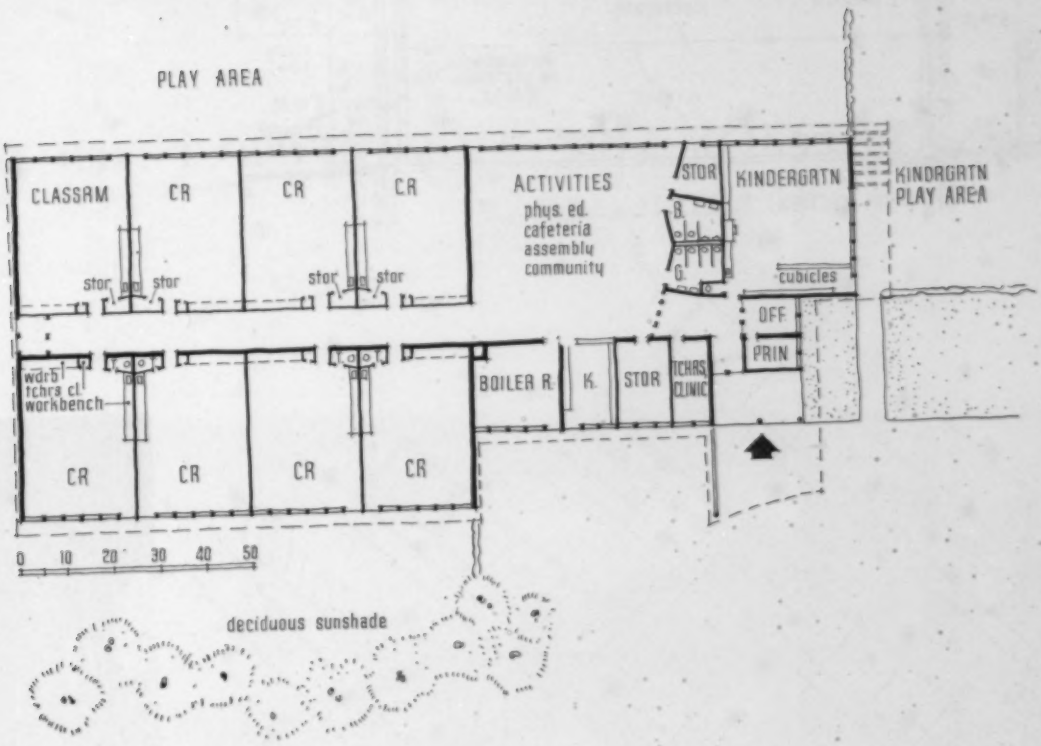
Materials are chosen for minimum maintenance. Where we have been using light paints, maintenance has been high. We now think that to use a light, natural plywood of approximately the same reflectance with a durable natural finish is much more economical in the long run. In this state there are certain grades of plywood that can be bought here very economically. These hardwood plywoods are not only good looking but tough.

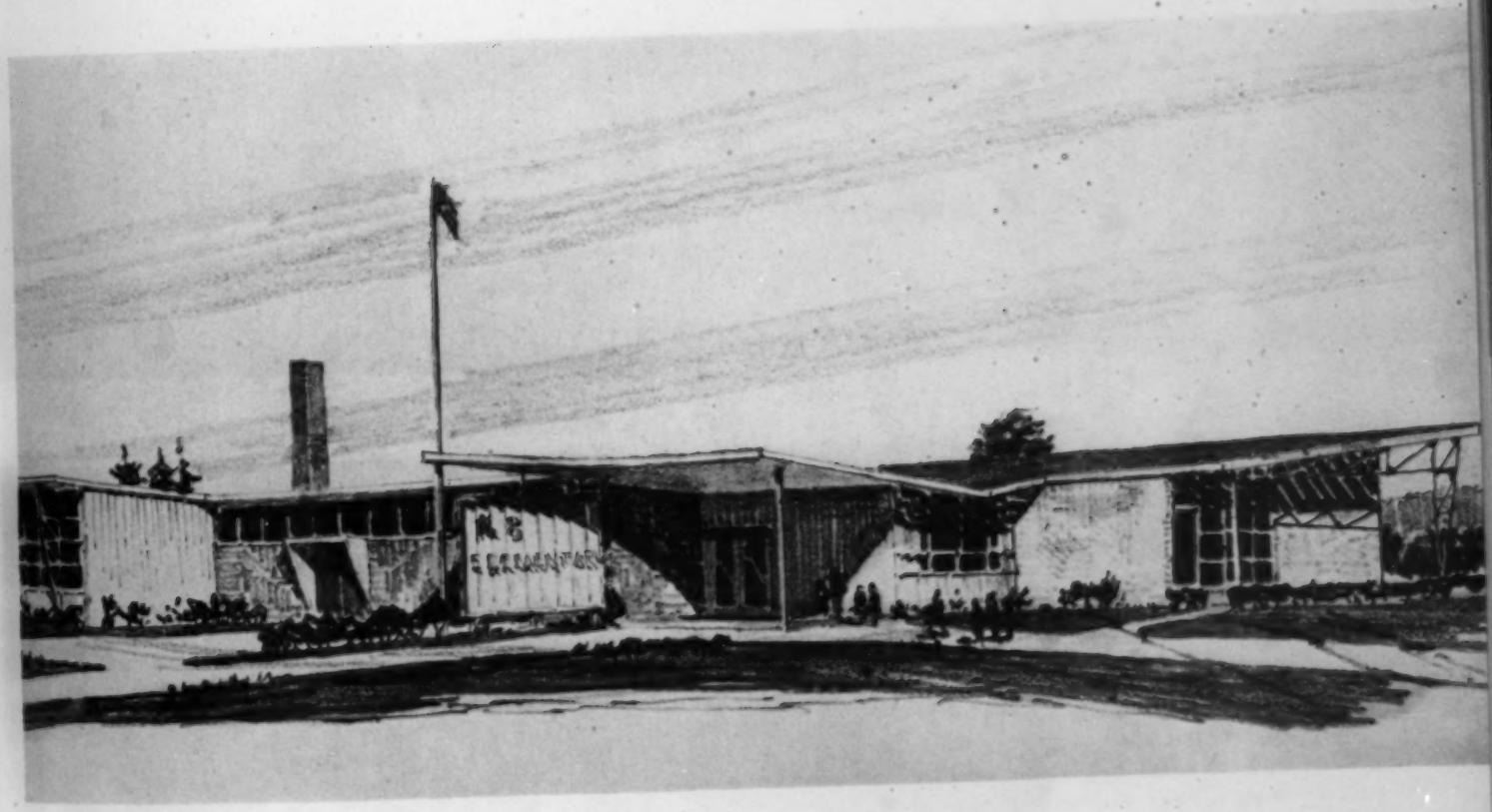
The end walls are of masonry with brick exterior. Under the windows we are using a prepared board of fibrous material an inch and a half thick with asbestos cement bonded to both exterior and interior faces. The sash is of wood. The floor covering is asphalt tile, except in the toilets, which have ceramic tile walls and floor. The ceilings are painted for light reflection and the walls above the plywood are painted the same color as the ceilings. The plywood extends up to the height of 7 ft, and from there above, it is plasterboard painted, with patches of acoustic material as needed. The plasterboard continues down in back of the plywood in all cases to give a fire-retarding effect.

In the K-8 school, we have exploited the economies developed in the Type R building and added certain features, notably the rigid frame structure, which we *believe* to contain further economies, combining them into a plan and building that make an architectural project of the purely engineering study developed in Type R.

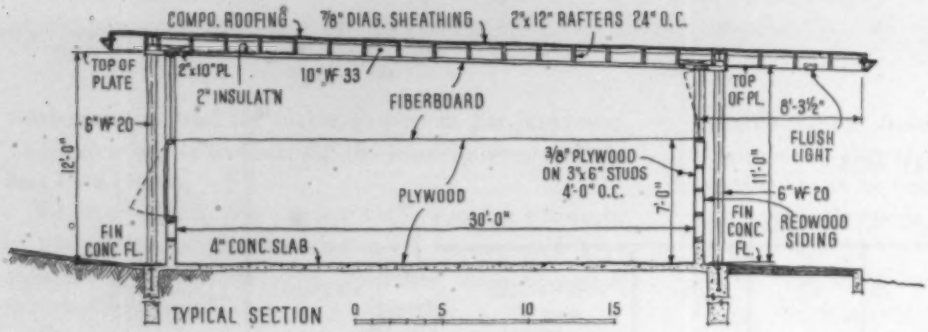
Classrooms are designed for artificial lighting, with daylight expected to serve only the outer portion of the room. Classrooms face east and west; Harriman proposes a screen of deciduous trees against afternoon sun

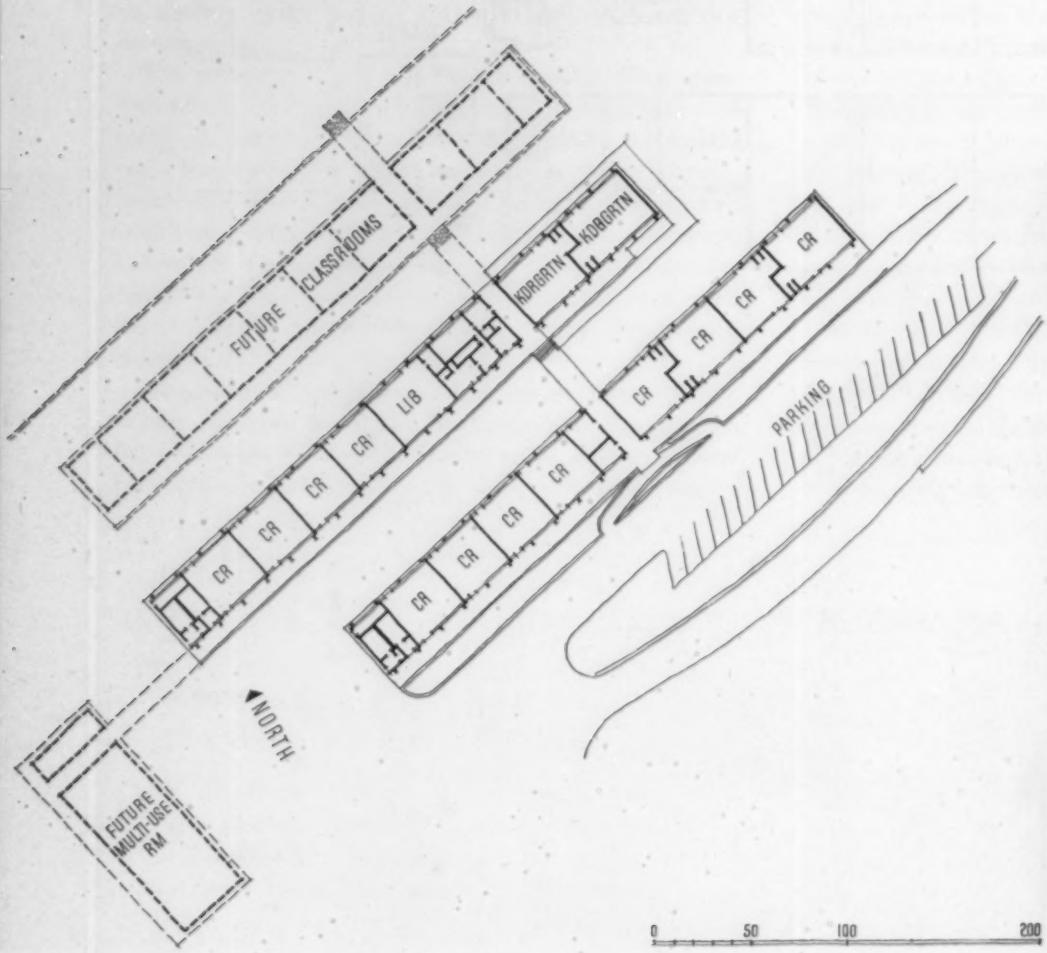






Harriman's cost studies extending over more than a year come to fruition in K-8 school (kindergarten and eight classrooms), which incorporates the basic findings and adds a wrinkle or two for good measure. The rigid steel frame, still not tested for cost, is occasioned by the deepening of the classrooms


COMPO. ROOFING
7/8" DIAG. SHEATHING
2"x12" RAFTERS 24" O.C.
TOP OF PLATE
2"x10" PL
2" INSULATN
10" WF 33
FIBERBOARD
6" WF 20
12'-0"
3/8" PLYWOOD ON 3"x6" STUDS 4'-0" O.C.
PLYWOOD
30'-0"
7'-0"
FIN CONC. FL.
4" CONC. SLAB
TOP OF PL.
8'-3½"
FLUSH LIGHT
11'-0"
6" WF 20
FIN CONC. FL.
REDWOOD SIDING
TYPICAL SECTION
0 5 10 15


FUTURE CLASSROOMS
KORGRTN
KORGRTN
LIB
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PARKING
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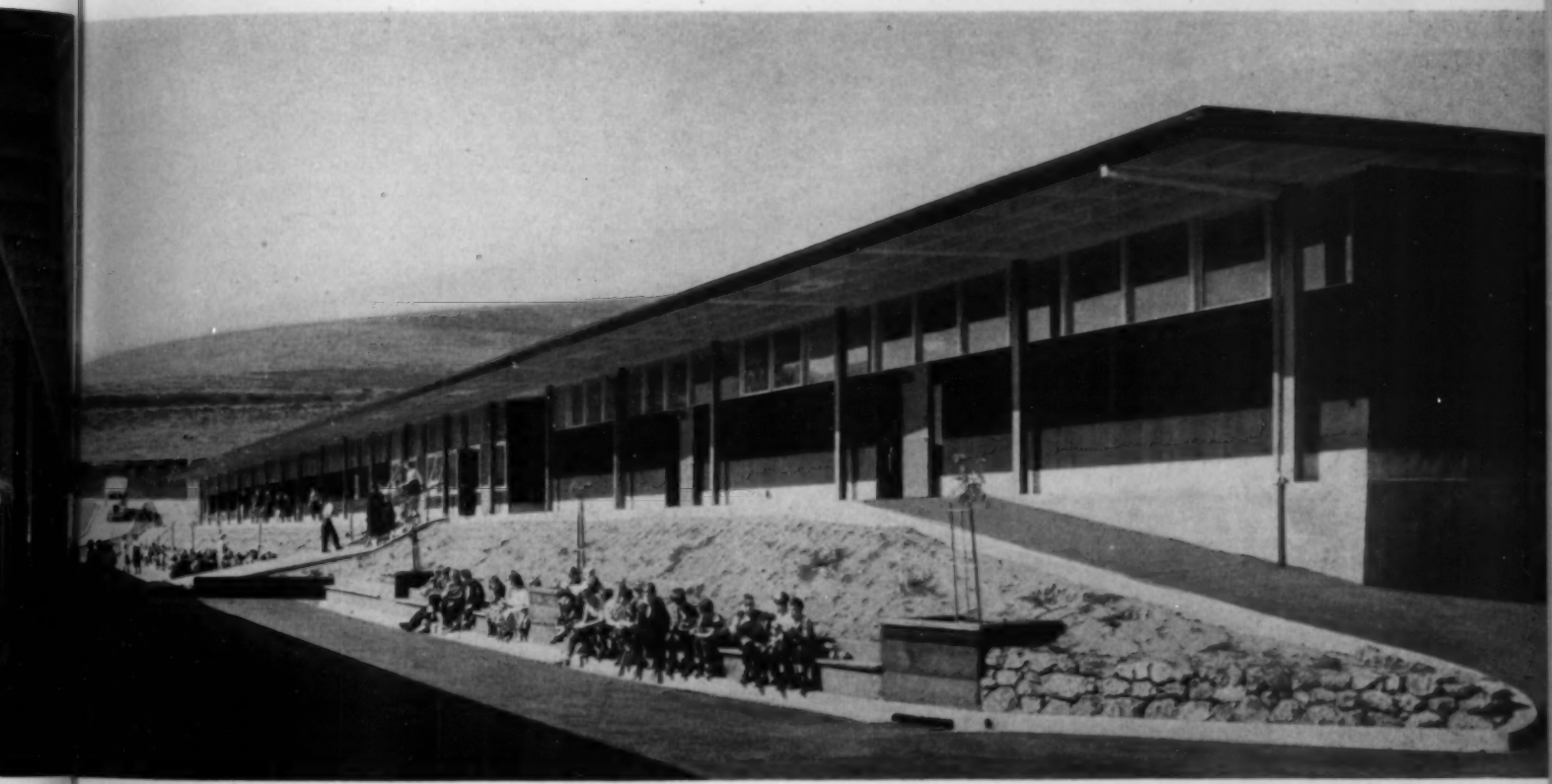
CUT THE COST BUT KEEP THE QUALITY

Arundel School, San Carlos, Cal.



Roger Sturtevant

Ernest J. Kump, Architect

Mark Falk, Engineer

OF THE low-cost group of schools out of the Kump & Falk office, Arundel is one of the most economical. In a chronological sense the true prototypes are Moorpark and San Tomas schools at Campbell, Cal. The schools in this group are all basically alike (photos pages 138, 9), but differ considerably in architectural aspects.

All are of the single-loaded-corridor, square classroom type, with bilateral lighting, without clerestory. All have a simple steel frame, with columns standing free of outside walls. The exterior walls become in effect partitions, placed just inside the columns. The frame is designed for simple, fast erection, and for most economical use of steel — no effort is made to fit the column spacing to the window or partition arrangement.

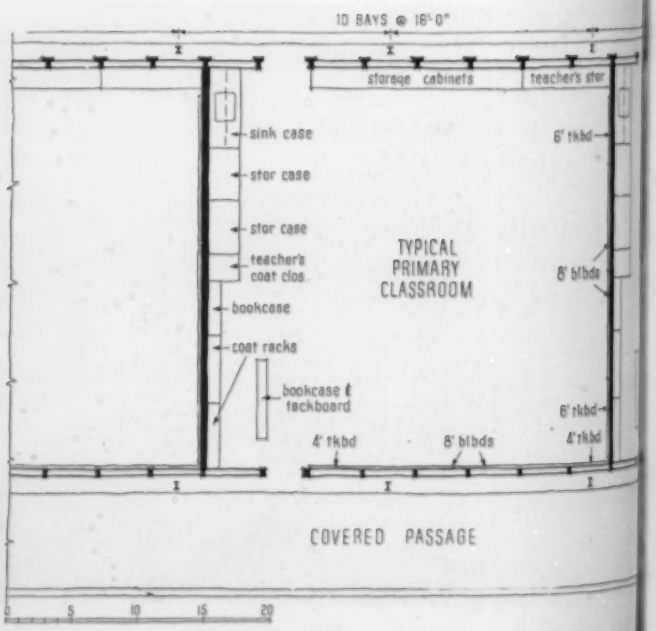
In general the schools in this group represent an expert paring down of dozens of items, preserving the functional quality of the school but choosing the least costly specifications. In working with school boards the Kump office stresses a thorough understanding of

TYPICAL SCHOOL COST BREAKDOWN

SHOREVIEW SCHOOL, SAN MATEO, CALIFORNIA

Ernest J. Kump, Architect & Mark Falk, Engineer

DIRECT COSTS		Per sq. ft.	
Move on and clear	$ 110.00	*	
Earthwork	2,250.00	$ .25	
Yard paving and grading & fencing	(17,980.00)	(1.95)	
Concrete and cement work	16,315.00	1.76	
Structural steel & misc. steel	8,250.00	.89	4.48
Carpentry, rough and framing	15,870.00	1.83	
Finish carpentry and hardware	7,075.00	.77	
Sheet metal	3,180.00	.34	
Steel sash	3,085.00	.33	
Roofing	4,180.00	.45	
Lathing & plastering	2,235.00	.24	
Glass and glazing	3,965.00	.43	
Metal stall partitions	1,260.00	.14	
Chalkboard and tackboard	4,840.00	.52	
Painting	2,985.00	.32	
Asphalt tile flooring	2,290.00	.25	
Insulation	60.00	*	
Bike racks	330.00	*	
Plumbing	5,810.00	.63	
Heating	7,845.00	.85	2.15
Electrical	6,110.00	.67	
Clean up and move off	460.00	*	
Miscellaneous*		.07	
TOTAL	$117,485.00	$12.69	
INDIRECT COSTS			
Office overhead, insurances, sales taxes, bonds, field overhead, superintendence and supervision	$12,635.00	$1.37	
PROFIT			
15% on labor and material	$ 6,350.00		
7½% on sub-contracts	5,635.00		
	$11,985.00	$1.30	
TOTAL	$142,105.00	$15.36	



costs of both construction and equipment, not forgetting the items not subject to control — grading, for example, or foundations on a difficult site. The firm reports that much educational effort is frequently required, as lay citizens are inclined to think of the building shell itself as the costly thing, forgetting the many by-paths of a real search for savings. Kump's brief-case usually contains, therefore, a sheaf of cost data sheets, including actual cost breakdowns for finished schools, tabulated lists of specification items arranged by relative costs, and so on. One example is given above: a breakdown for the Shoreview school, San Mateo (ARCHITECTURAL RECORD, March, 1949). Notice, for example, that chalkboards and tackboards cost more

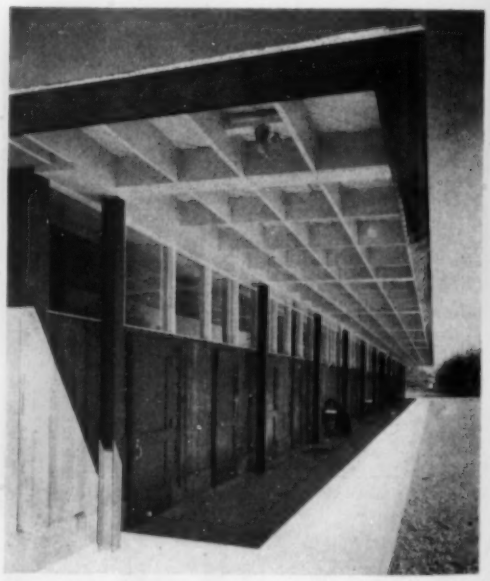
Roger Sturtevant

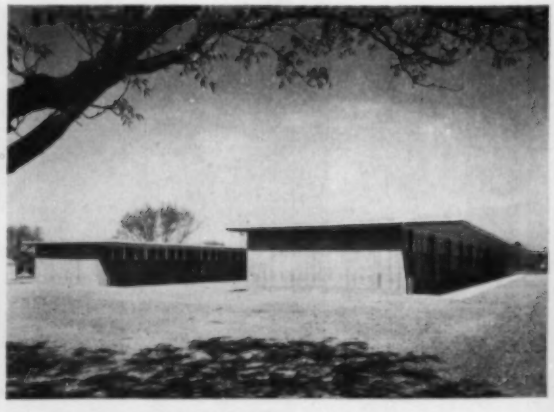
than half as much as structural steel, yard work twice as much as steel work and more than all rough carpentry. In fact yard work was the one most costly item. Indirect costs of overhead were the fourth largest item, followed by contractors' profits.

As for Arundel, the architects have compiled a list of ways in which costs were kept down:

1. No covers (roofs) over the cross-connecting corridors.
2. Underside of the corridor along the building is unfinished, exposed, painted structural timber.
3. Building has concrete slab on fill. There is no under-floor space.
4. Foundations largely on rock, low foundation design cost.
5. Exterior siding applied directly to studs. No sheathing underneath the siding.
6. Studs themselves form window mullions.
7. Less than one-half glass in operable sash. More than one-half glass fixed with stops to studs.
8. Interior finish all plywood.
9. Ceiling finished with fiberboard tile.
10. Less expensive grades and colors used for asphalt tile floor.
11. Conduits only for public address system.
12. "B" grade window glass double strength, rather than plate glass.
13. Wood sash.
14. Floor mounted toilets, rather than wall-hung.
15. Plaster finish in toilet rooms.
16. Cement floors in toilet rooms.
17. High ratio of usable classroom space to auxiliary space, efficiency in space planning.
18. Standby classroom lighting only. (Classrooms completely wired, but only one-third of the fixtures installed.)
19. Main cabinet work of Douglas fir, rather than of hardwoods.
20. No exterior stucco or brick.
21. Only one structural frame used throughout.
22. Asphalt concrete floor in exterior corridors, rather than cement.
23. No guttering, downspouts or rain leaders — simple drainage system.
24. Birch sink tops and splash backs.
25. Standardized pre-fabricated chalkboards and tackboards.
26. Flat, built-up roof.
27. Use of stain on redwood exterior finish.
28. Radiant floor panel heating.
29. Natural ventilation, no forced air system.
30. No expensive special rooms — cafeteria, music room, etc.
31. Playground equipment not included.
32. Readily available utilities.
33. Convenient location of job in relation to labor and material supply.
34. Mild climatic conditions; year-round construction; no insulation necessary in the exterior walls.

Below: Moorpark School, Campbell, Cal.

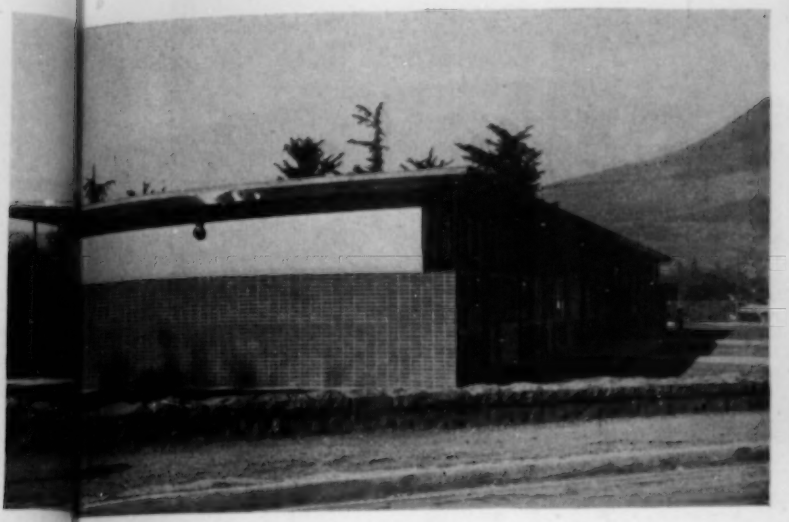


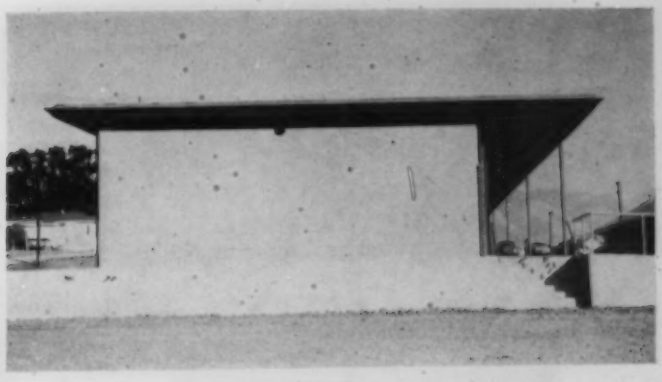


Skelton Studios

LOW-COST SCHOOLS

BY KUMP & FALK





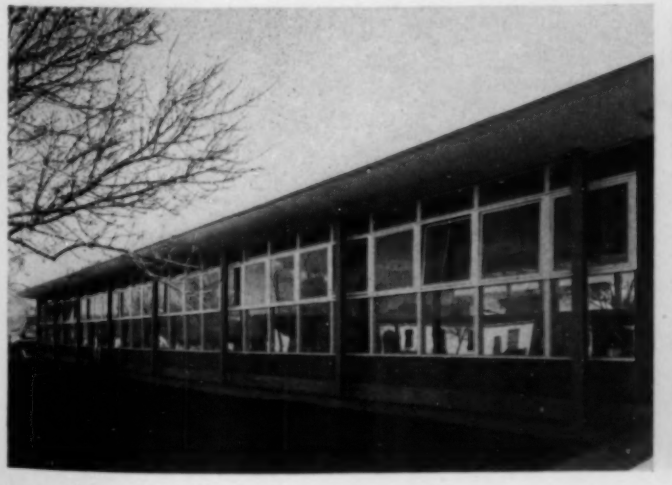
Above and left: Emerson School, San Luis Obispo, Cal.

Right: Two views, Teach School, San Luis Obispo, Cal.

P. O. Hardin School, Hollister, Cal.

Skelton Studios

Below: two views of the Eliot School, Gilroy, Cal.



"MODEL FOR OUR LOW-COST SCHOOLS"

Deerfield Primary School, Deerfield, Ill.

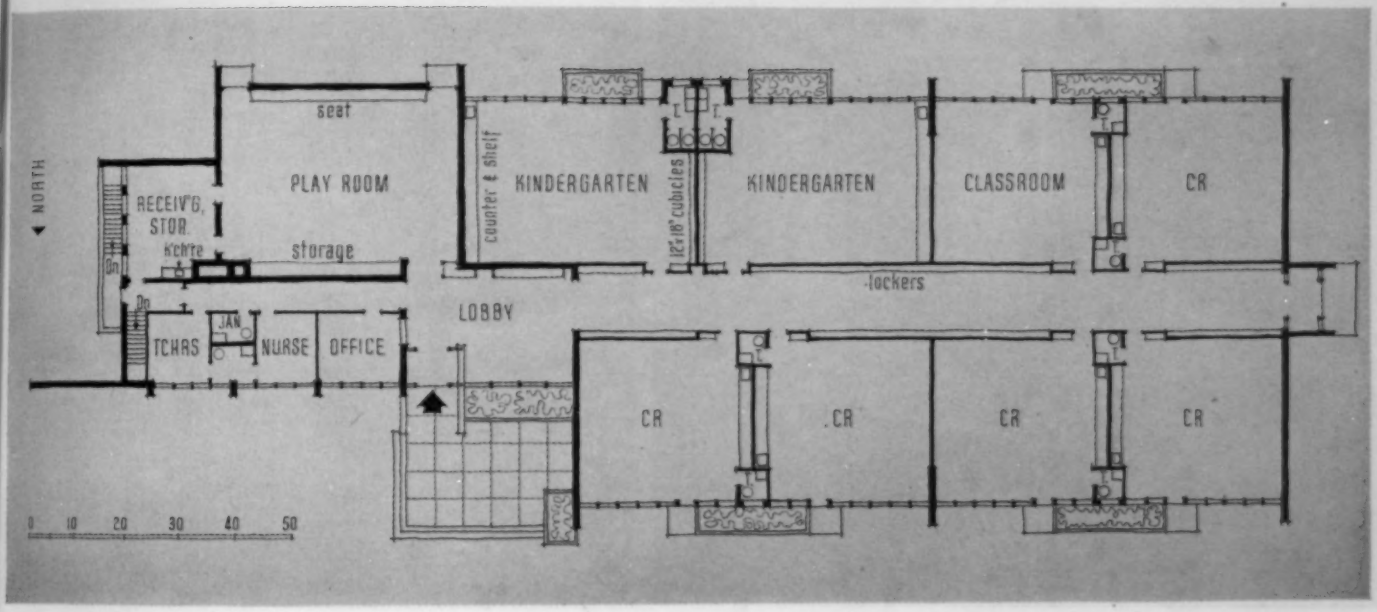
Perkins & Will, Architects-Engineers

Hedrich-Blessing Studio

THE ARCHITECTS give this Deerfield school a prototype rating, for it will serve as the basic model for a great number of low-cost schools throughout the country. They do not, however, want it to be taken as a low-cost school of itself. It is rather the model for their low-cost schools.

Deerfield, bid in at the 1948 peak of building costs, ran to $15.88 a sq ft, or $1.22 per cu ft. It has some quality features — limestone trim, built-in window boxes, fire-resistant construction — which might not be considered necessary against a close budget.

Its prototype considerations lie in design features, not necessarily expensive, which represent the current Perkins & Will thought, breaking somewhat with other ideas. "We believe in sunlight, break sharply with the tendency to erect artificial barriers . . . and to reduce all color contrast in a classroom to a dull monotone."



Deerfield has floor-to-ceiling windows, for a feeling of spaciousness and for unity with outdoors, but its visors are relatively narrow. Deerfield uses much of the warm colors, even though brightness contrasts might not be just so. Painted concrete block and red brick interior partitions "broke sharply with the recent trend to insipid flat colors for 'visual comfort.' The psychological value of strong color accent and unrestrained warm sunlight is apparent."

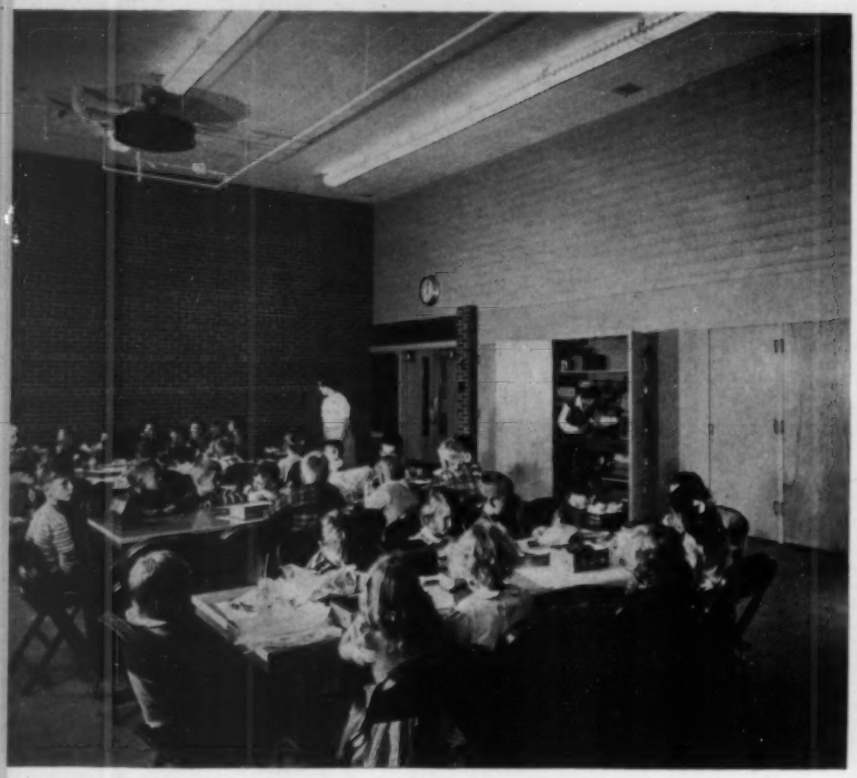
This school is bilaterally lighted, through clerestories over a double-loaded corridor. The double corridor scheme is an economy measure; calculations indicate it saves something more than 5 per cent over single corridor plans. This type of lighting, it is pointed out, helps keep the ceiling down to a child scale.

Square classrooms here are also current favorites of the architects. There is a long utility workbench, with

sink, which is a saver of space. It is found that children concentrating on work projects here seldom bother their classmates who are focussing on the chalkboard at the opposite side of the room. There is no space in the classroom for clothing, as this space is considered too usable. Deerfield uses lockers in the corridor.

In a school of this size (kindergarten and six grades) the playroom-cafeteria combination seems to work well, though the architects are quick to assert the difficulties of combining real gymnasium and auditorium needs. Here, with storage room readily accessible, teachers have become quite expert at quick changes in the multi-use room. Children at Deerfield bring their own lunches;

Hedrich-Blessing Studio

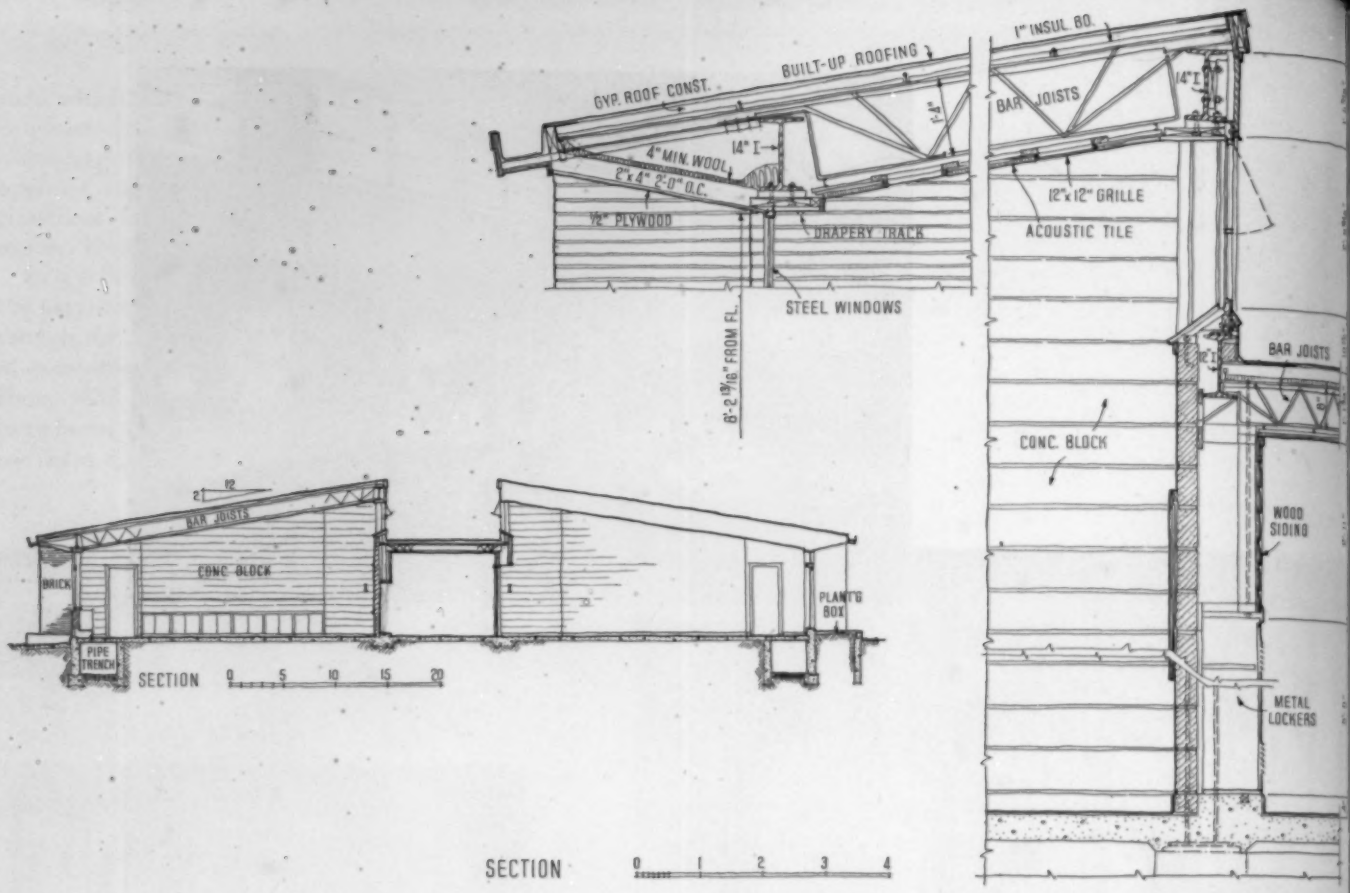


kitchen facilities are needed only for teachers' use, for serving milk and ice cream to children, or perhaps for small community gatherings.

Deerfield also stresses the outdoor classroom, and has large planting boxes for an additional tie between indoors and outdoors. The outdoor classroom rates high in the thinking that makes Deerfield a prototype school.

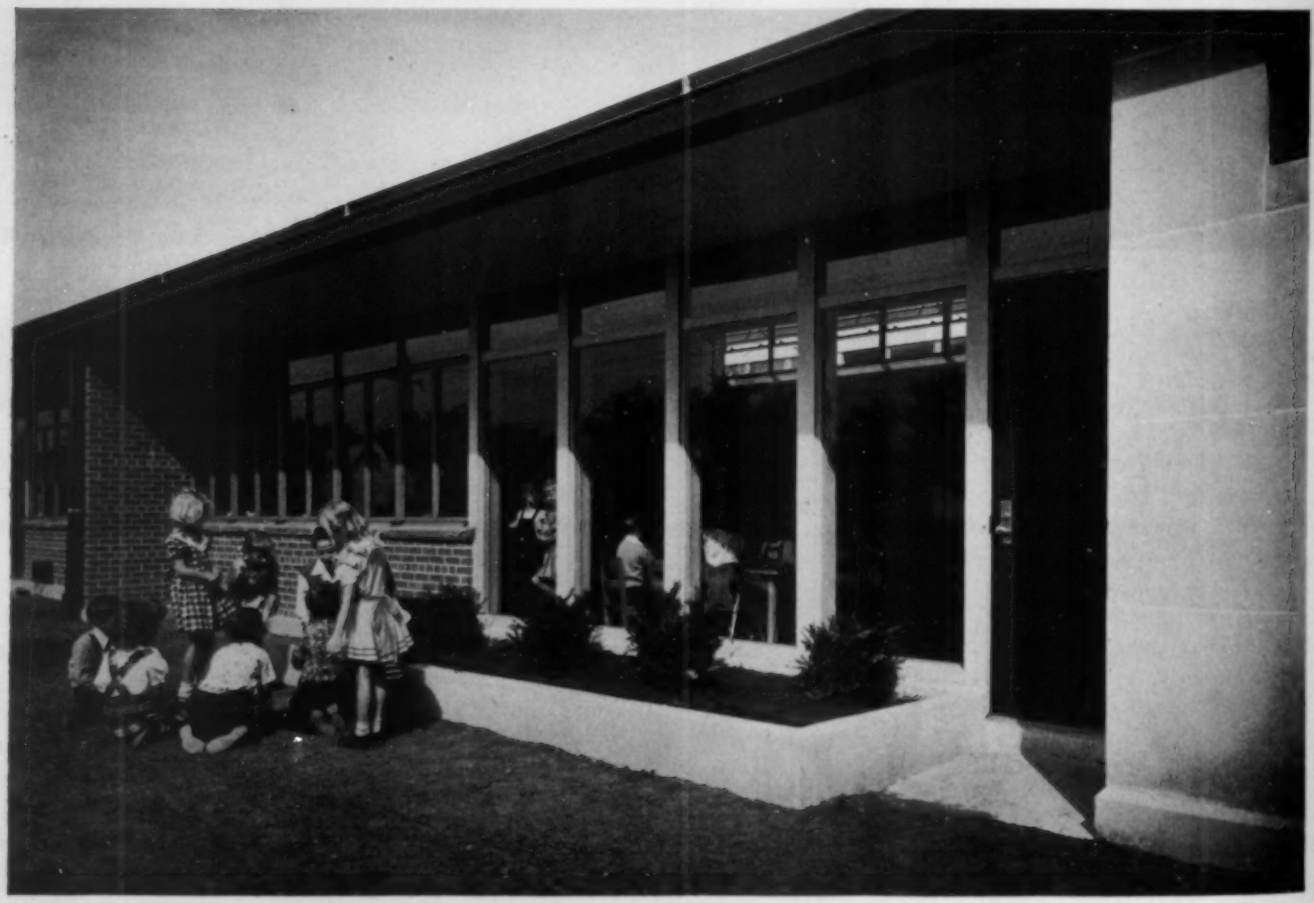
Many of its standards of construction could be cut down if necessary to meet budgetary requirements, but the basic elements that make this school a pattern are not essentially matters of costs. Its auxiliary spaces are about at the minimum. They would have to be enlarged considerably if, say, seventh and eighth grades were added in another program. Central toilets would be required, more sports facilities, and more serving facilities. The architects express the feeling, however, that for a "K-6" type of school, Deerfield represents their starting point for similar assignments.

Typical classrooms at Deerfield have floor-to-ceiling windows in at least part of one side, clerestory over the corridor on the other. They have a long activity bench on one transverse wall (far right, center), chalkboard on the other, tackboard under the clerestory windows. Clothing is kept in corridor lockers, to keep wall space free



Clerestory lighting over a double-loaded corridor (details above) help keep ceilings down to child scale. Planting boxes join indoor and outdoor classrooms

Hedrich-Blessing Studio



Roger Sturtevant

DEEPER CLASSROOMS YIELD ECONOMIES

Buri-Buri Elementary School, South San Francisco, Cal.

Bamberger & Reid, Architects

THOUGH THIS school is here presented somewhat sketchily, being still unfinished, its economy ideas are worthy of immediate inclusion. Interestingly, Mr. Reid's pursuit of savings checks generally with some others in this study, but they were arrived at independently and applied differently.

Buri-Buri is one of four similar schools (others are Los Cerritos, Martin and Southwood-Brentwood) for South San Francisco, a suburban town whose population has tripled since before the war. Its square foot cost of $9.05 puts it in the low-cost class, but this figure includes a mechanical plant large enough for an expanded program, and thus does not truly measure its planning economy.

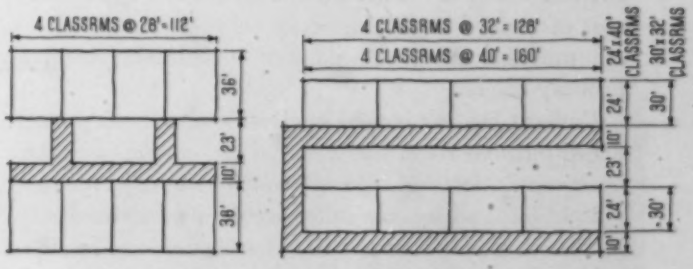
Most noteworthy of the economy ideas are:

1. Shortening outside wall by deepening classrooms.
2. An ingenious corridor scheme to save corridor cost.
3. Inexpensive framing for the increased depth.
4. Construction economy in general.
5. Multi-purpose room designed "for everything but midget auto racing," which slides its stage under the heater room.

Reid keeps to the daylight concept, with bilateral lighting and clerestory, and single loaded corridor, and manages it most economically.

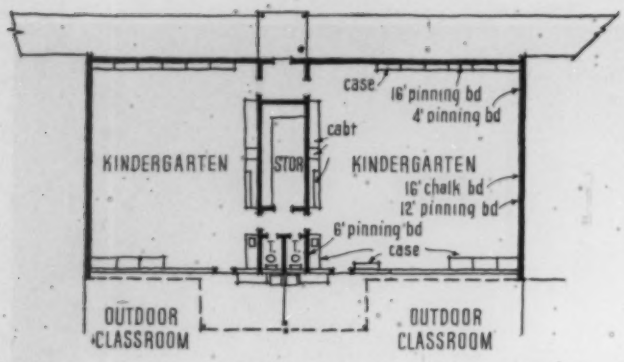
The classroom dimensions are 28 ft in "length" by 35 ft in depth. The 28 ft compares with 32 and 40 ft, both much used in California. The shortening of the outside wall is, then, quite considerable, a saving in window construction in both the outside walls and clerestory. There is a corresponding shortening of corridors.

Buri-Buri uses a single corridor for two rows of classrooms, with a short cross corridor to each two rooms in the second row (see diagram below). As the tabulation



	Buri-Buri	24x40 Classrooms	30x32 Classrooms
Total corridor length	158	387 *	331
Total areas* (sq ft)	9260	11550	10990
Bldg. area per pupil	38.6	47.9	45.8
Relative costs †	$76,653.	$87,015.	$84,481.
Bldg. cost per pupil	$319.	$363.	$352.

** All classrooms 960 sq ft; all corridors 10 ft wide.*
† Sq ft cost of Buri-Buri, $9.05 per sq ft, used for all corridors at half of bldg. cost.



shows, the saving amounts to from 52 to 60 per cent of total corridor length, a substantial cut in this non-productive space. Not indicated in the diagram is another idea — the corridor is not directly against the building; it is set out by the width of the roof overhang, to let light in for a slightly deeper window, and to simplify the structural system.

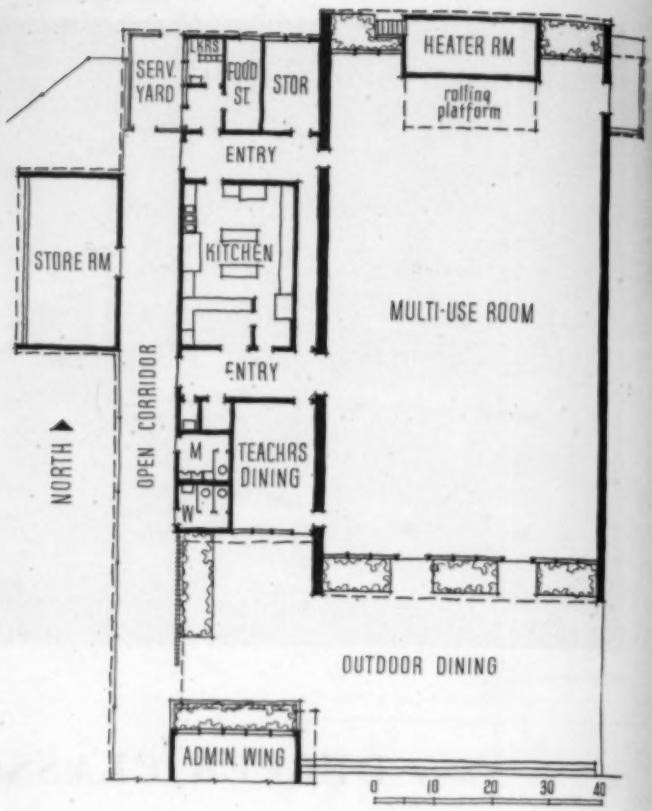
As for the structural system, the architect reports, "Our office has used lightweight steel joists and structural steel construction because we are fully convinced of its economy. The economy, however, is dependent on structural design. Our design uses a complete steel skeleton, which means that when foundations are prepared the steel may be erected without overlapping other crafts. The steel on this project required about two and a half days for erection, so that there is an economy in time as well as cost."

The multi-purpose room at Buri-Buri is exceptionally ambitious, with full kitchen facilities, rolling stage, fold-away tables, motion picture provisions. It is intended for heavy community use in a burgeoning town now almost without any recreational facilities. A cubage-saving idea was the elevation of the heater room to permit the stage to roll under it — the stage area adds nothing to the room dimensions.

Construction economy crops up in many details. Exterior siding is redwood, treated with a natural stain. Interior finish of classrooms is plywood, with a single cost of stained wax. Classroom cabinets and casework are movable; they are painted in different brilliant primary colors.

Radiant heating is used in classroom and office areas. Multi-purpose room has a warm air system providing both ventilation and separate control for night use.

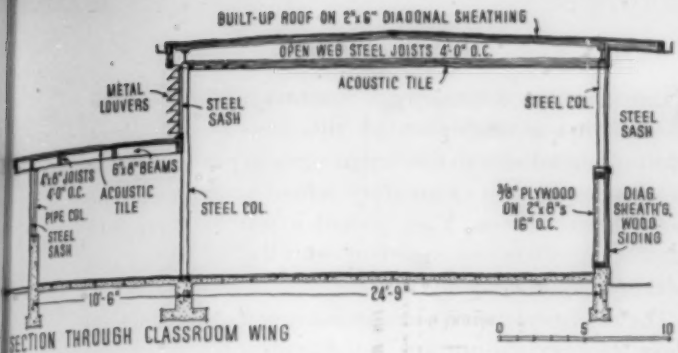
Reid joins with some other architects (in this study) in allowing some sunlight to enter classrooms. Sunlight is kept out of study areas, however, by louvers in the clerestory and visors over other windows. Clerestory louvers are of stainless steel. Simplicity of design kept them quite inexpensive ($1.20 per sq ft of vertical surface), and the stainless steel has zero maintenance cost. Glare reducing glass is used in lower panes of north windows, to eliminate brightness contrast between north sky and chalkboards. Outdoor classrooms are located to the south, for full sunlight and for protection against the chill winds of the San Francisco climate.



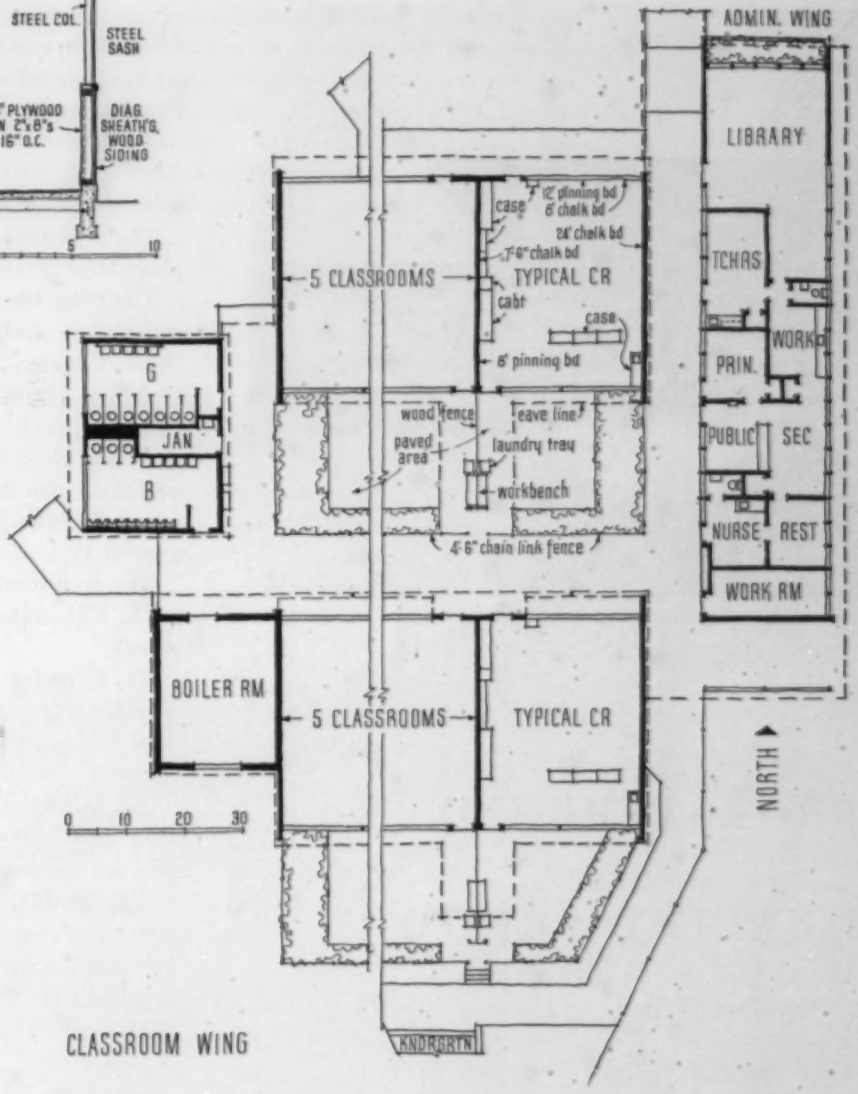
Multi-purpose room is a separate building, really a community building, with full kitchen facilities. It serves a fast-growing community, where recreational facilities are needed as badly as schools

Exterior of multi-purpose room (under construction)

Roger Sturtevant



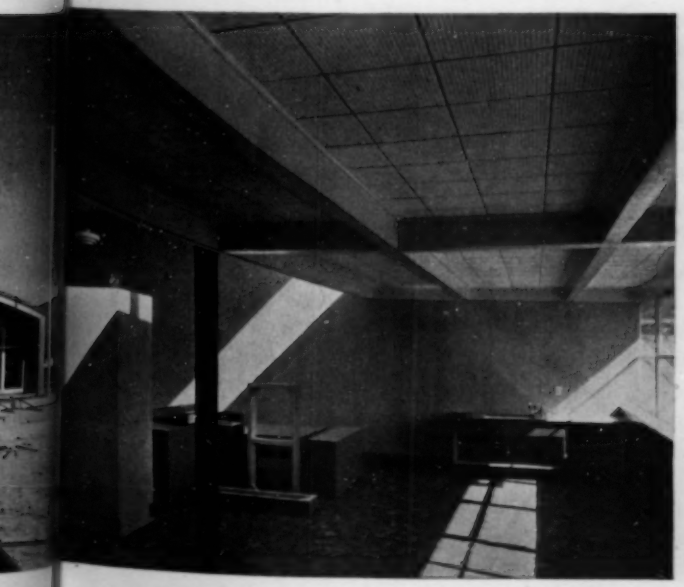
SECTION THROUGH CLASSROOM WING



CLASSROOM WING

Plan shows total program for Buri-Buri; for the present only one classroom wing has been built; kindergarten, administration wing and community building ready for full program

Classroom interior, in almost-complete stage

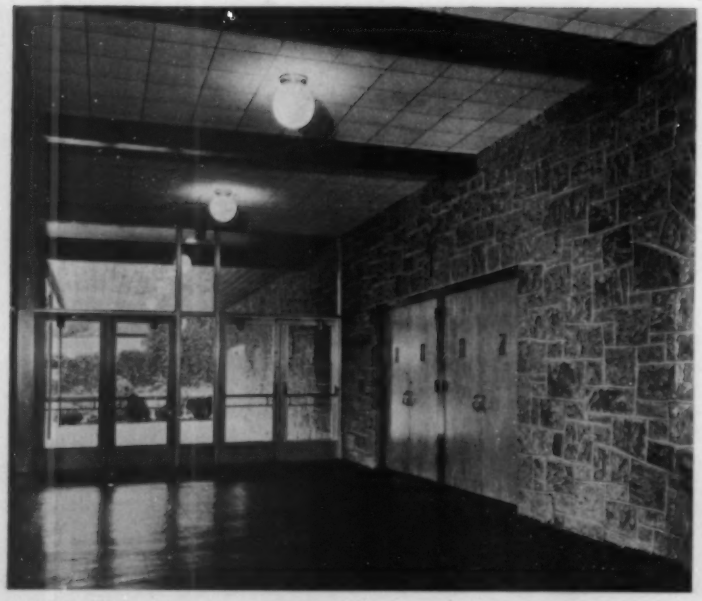


Stage in multi-purpose room rolls under raised heater room

PROTOTYPE FOR A QUALITY SCHOOL

Transfiguration School, Tarrytown, N. Y.

Robert A. Green, Architect



ALTHOUGH not necessarily a "prototype" in the sense that it will be duplicated, this school is the direct result of a pilot search for design economy in schools for the current crop of elementary school youngsters. The Archdiocese of New York picked a test location, and deliberately chose an architect who had already been working along economy lines.

The bid figures were such pleasant news that the final plans were revised upward, not downward.

The program did not call for a minimum school, but rather for a maximum effort at eliminating the extras in the cost figures. Stone facing and slate roof, for example, could have been left off. And the school is well equipped, including such items as stainless steel kitchen work surfaces. The contract cost of the building was $252,800, or 71¢ a cubic foot. The Archdiocese figures this to represent "a saving of 33 per cent in comparison with the typical type of school construction."

The architect's early precepts are given thus:

"1. Eliminate the costly architectural embellishments.

"2. Eliminate all plastering and as much millwork as possible — two costly trades.

"3. Use an inexpensive yet quickly constructed frame.

"4. Standardize wherever possible — i.e., one type of door for all interior openings, one type of exterior window for all rooms, etc.

"5. Finally, the design and construction should be such as to blend harmoniously with the adjacent properties and, while low-cost was the watchword, we could not make the basic mistake of developing a unit which would be apt to disintegrate or be costly to maintain as it grew older."

The architect added a further principle to his list, one he reports to have been quite effective in this school. That is to design for the contractor, for fast construction. Don't be afraid to ask a contractor for pointers. The stonework here, for example, is actually an added veneer. It would be nice to think of it as sharing the structural load, but it doesn't; it was put on later than the concrete block, because that was cheaper.

The building was designed as a wall-bearing structure of hollow, textured concrete blocks (expanded slag is the coarse aggregate), with interior face exposed as the classroom wall. Corridor walls use the same blocks, with glass block borrowed lights, all unplastered and unpainted.

The floor system uses filler blocks with precast concrete joists, 11 ft. 6 in. in length, bearing on the block at outside bearing walls, and on 14-in. I-beams at the center of the classroom and corridor bearing walls.

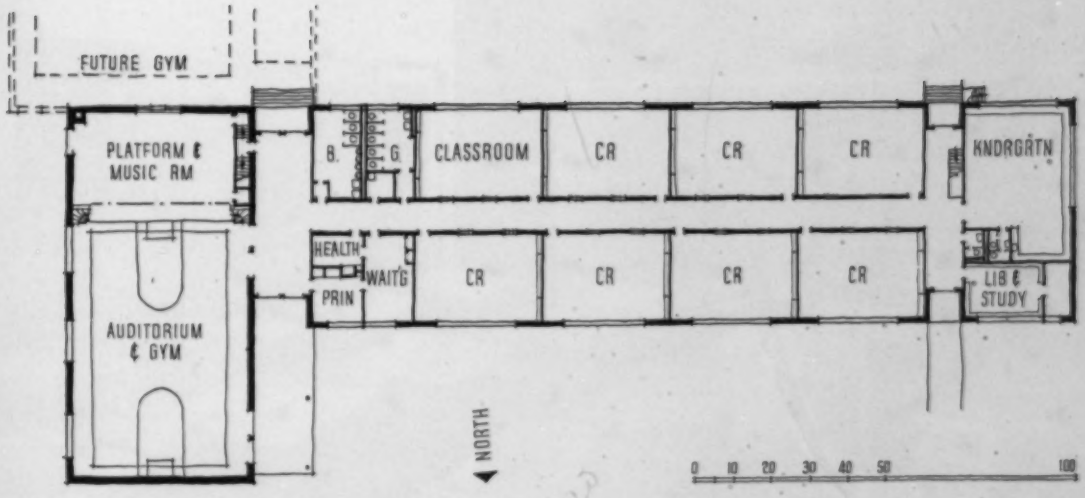
Wooden roof trusses (1 to 3 pitch) also made for simple, fast construction. Wood furring strips were attached directly to the trusses, for 12 by 12 in. acoustical tile. All electrical conduit is run in this attic space, to save cutting into concrete blocks. Lighting fixtures for all classrooms are concentric ring, incandescents.

It was early decided that there would be no attempt at sufficient daylighting for full normal needs. The archi-

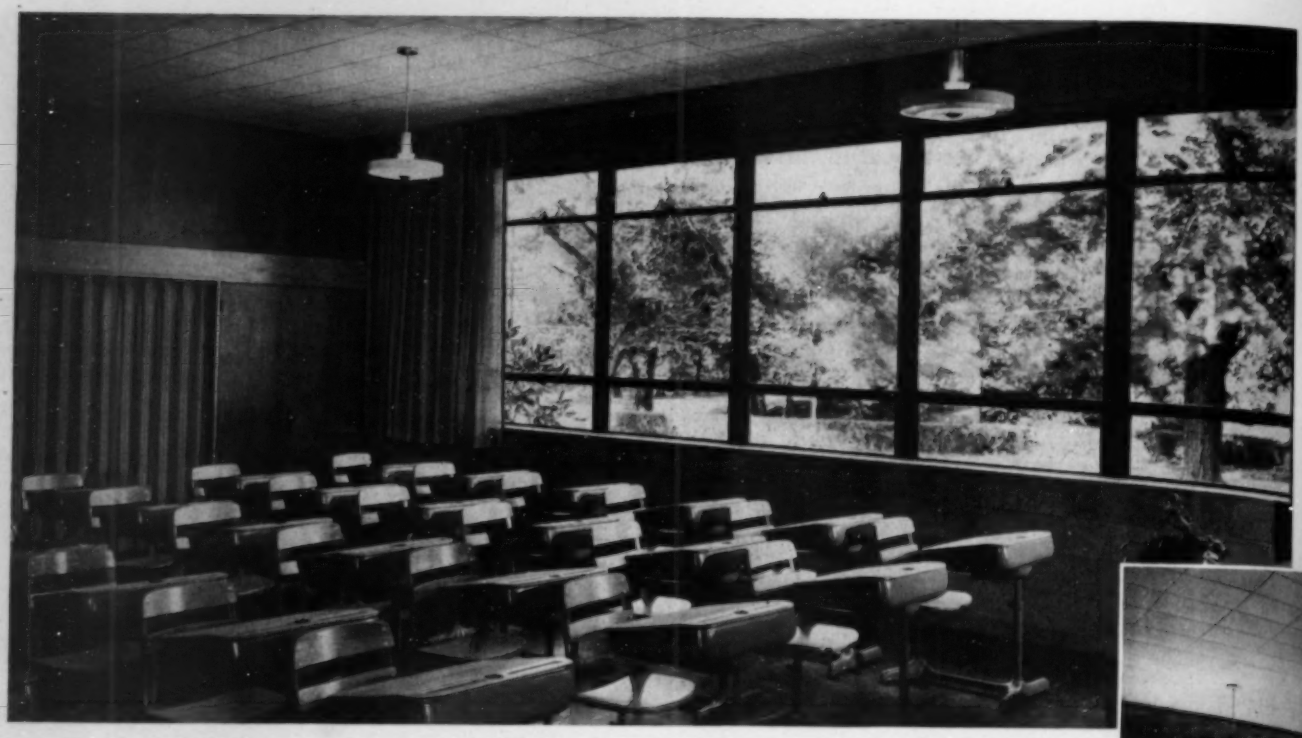
tect explains that complicated framing for clerestory lighting and large window areas would not be possible with the simple construction system that was sought.

The New York Archdiocese shows every sign of great pride in this school, and it is constantly visited by representatives of other parishes. The Archdiocese is watching it closely in operating, and will continue to use it for study.

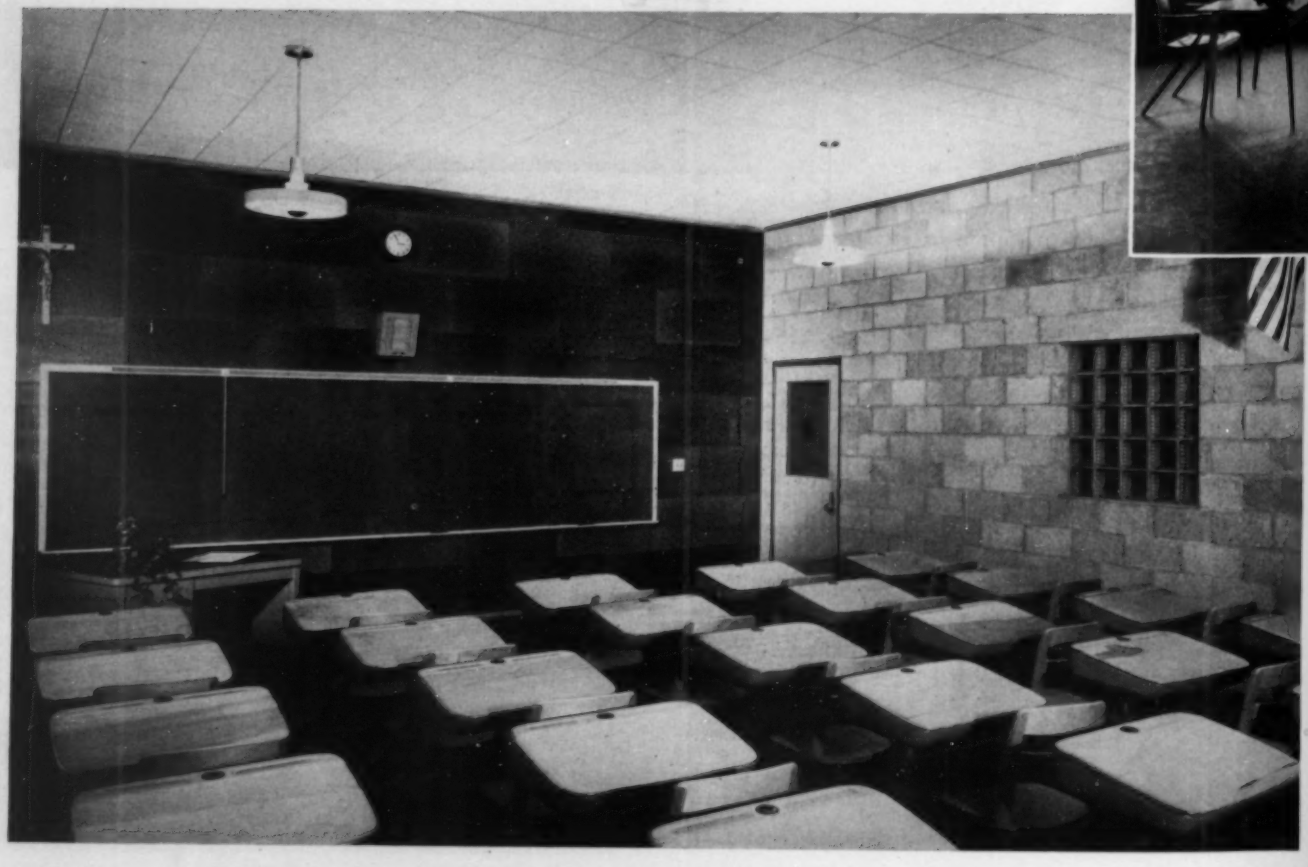
James Vincent



There is basement space under auditorium stage for boiler room and locker room, under kindergarten for kitchen and cafeteria



Classrooms have more warmth and color than the camera can show. Corkboard front wall (below) is quite warm in tone, as is also the plywood finish of rear wall (above). The fold door in rear wall screens wardrobe; teacher's cabinets on either side. While windows are designed for a very open outlook, they are not relied on for full lighting

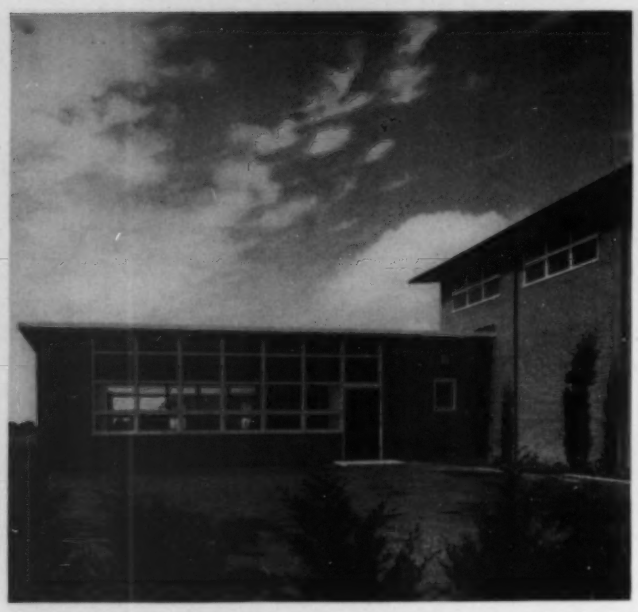


Transfiguration School uses combination gymnasium-auditorium for the present, but plans call for separate, larger gym at a later stage. Space under stage stores seats. Partial basement under stage contains boiler room and locker room with showers. Heating here, as throughout, is radiant system in floor slab

James Vincent

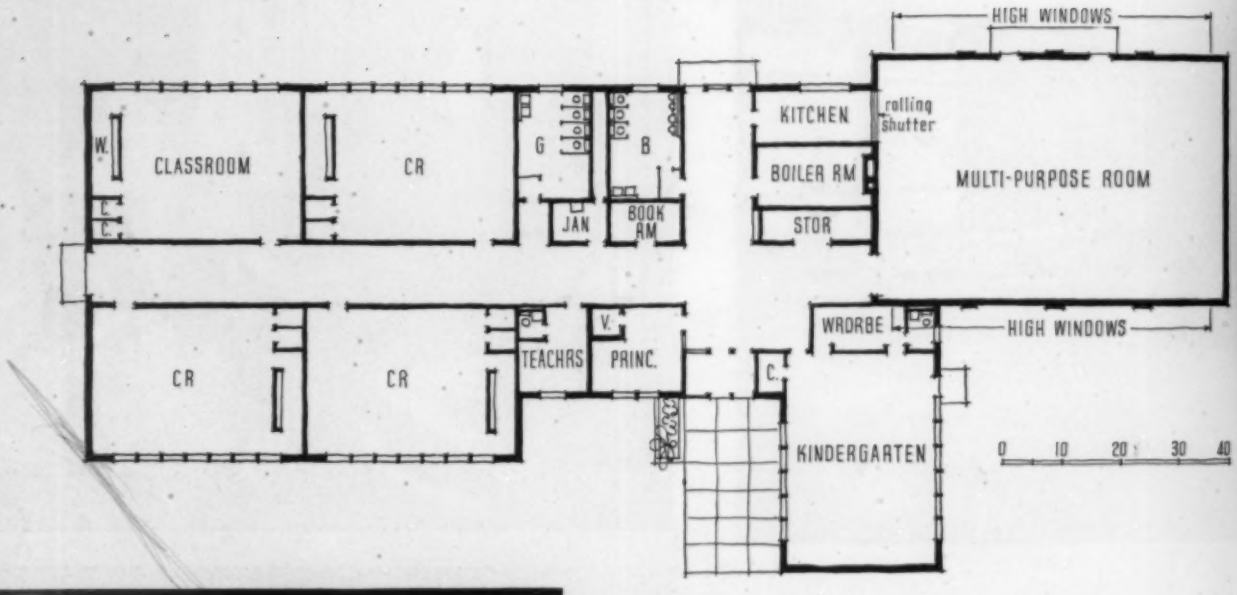
Kindergarten (above) is open to south and west, with highly colorful drapes for sun control. Open shelving clear around the room provides plenty of storage space. Waiting room (right center) also serves as Sisters' lounge, is served by a small kitchenette. Cafeteria (right) is completely unfinished, except for a few striking color accents. This room is served by a complete kitchen

TYPICAL SCHOOL BUILT



Lawrence

A TYPICAL school type, for a typical school situation, this one was done for non-typical costs. It represents the consolidation of three one-room schools in a fast-growing community. It begins existence with but four classrooms, but with kindergarten, multi-purpose room and mechanical plant ready for the addition of four more, altogether a typical beginning. It runs to a familiar design pattern of double-loaded corridor, with bilateral lighting via a dropped corridor height.



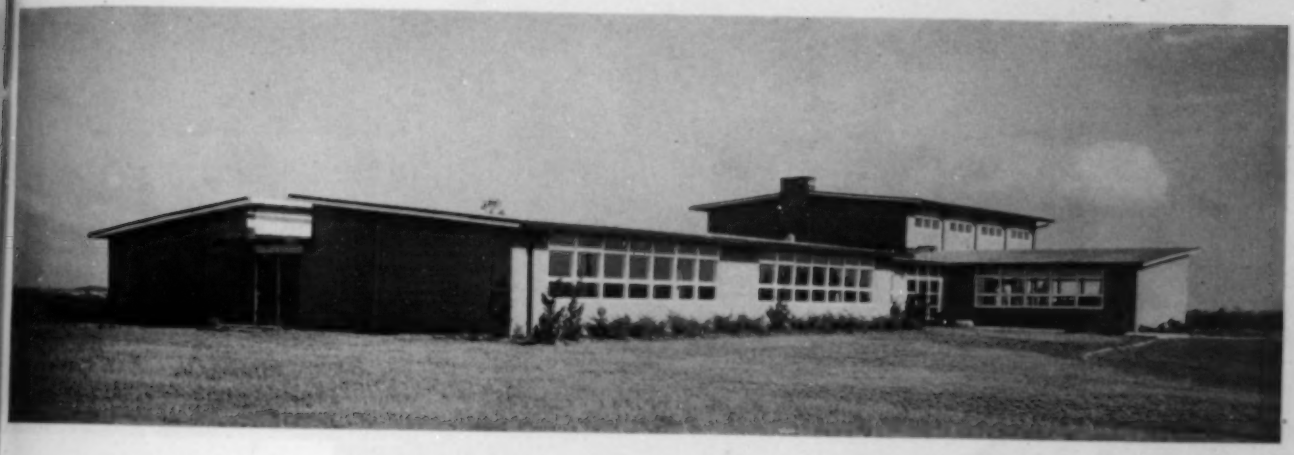
The pattern of costs, however, is more distinctive. Total cost of building was $90,951; 63¢ per cu ft; $8.00 per sq ft; $519 per pupil.

The building is constructed of a local red shale brick with concrete block backing, the block exposed on the interior. Roof construction is a built-up roof over 1-in. glass insulation board and 2 by 6 tongue and groove sheathing, which forms the ceiling. Floors are asphalt tile over a concrete slab on grade. Radiant heat was used. The site is particularly good — five acres on a superhighway location in rural surroundings.

AT LOW COST

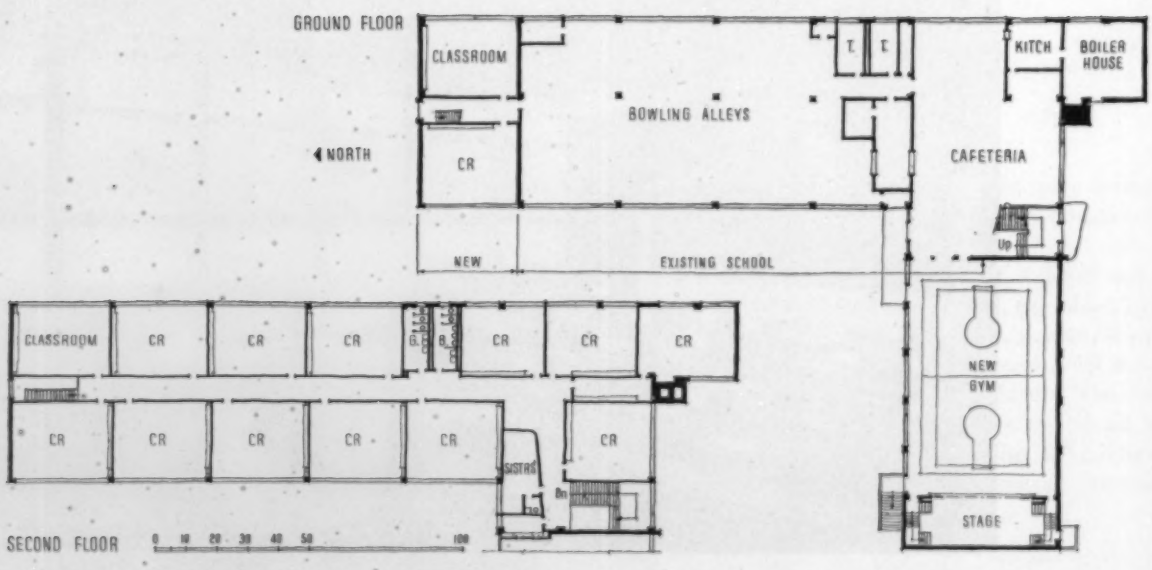
Mason Ridge School,
St. Louis County, Mo.

Wischmeyer & Lorenz, Architects



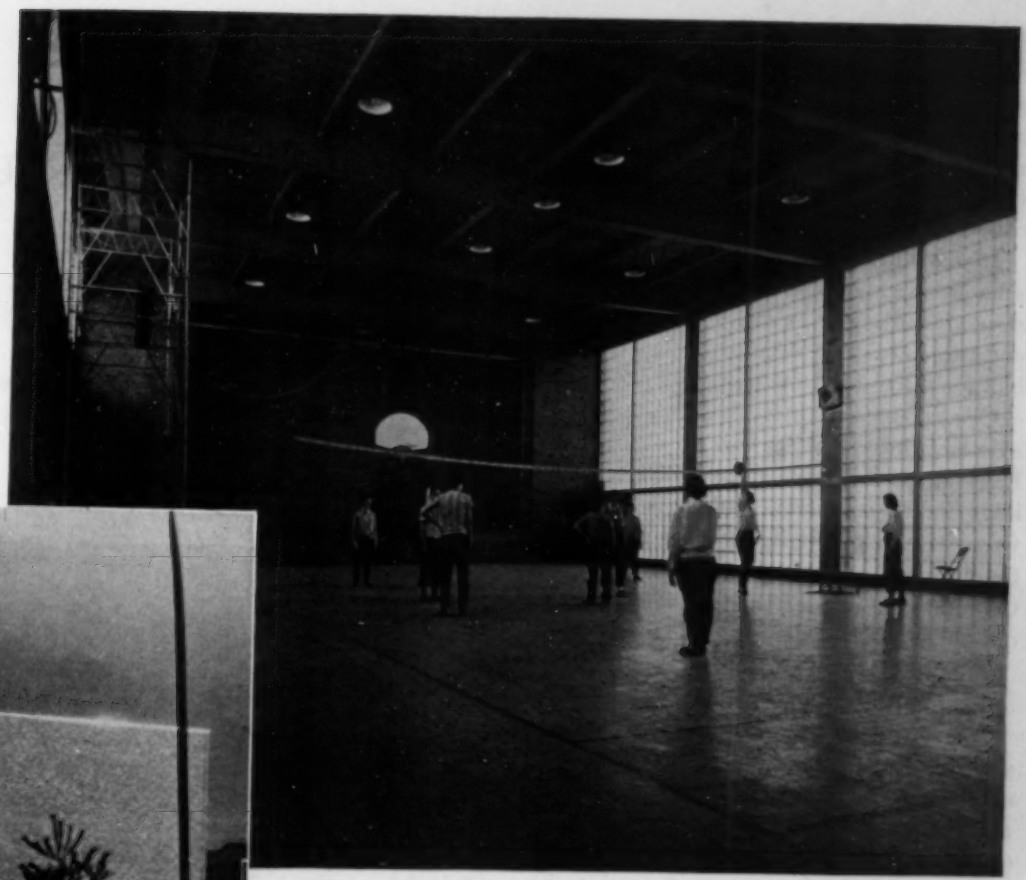
PARISH SCHOOL AND RECREATIONAL CENTER

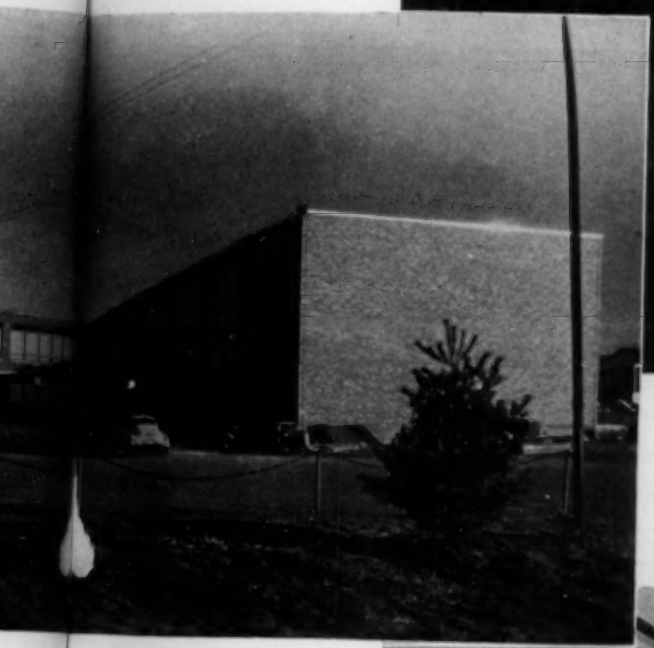
As a parish school for a Catholic community, this looks like a high school but is really for only six grades. Much of its cube goes into recreational facilities for the parish. Actual classroom space is difficult to sort out on a cost basis, for the present program added a classroom floor to an existing community building. However, for the addition costs ran 77¢ per cube, $14.00 per sq ft, working out to around $315 per pupil.



St. Gregory's School
St. Ann's Village
St. Louis County, Mo.

Joseph D. Murphy
Architect





Robert Frei

COMMUNITY SCHOOL DE

Elementary School, Burlington, Conn.

Moore & Salsbury, Architects

Joseph W. Molitor

HANDSOME as it is, with its hard brick walls and its clerestory lighting, this school sets something of a record for economy in its state. And Connecticut is not known for throwing its money around. The state average postwar cost per pupil is $1,131.77, whereas in this school, the cost per pupil is $696.00, or $20,900 per classroom.

It was built to replace six widely separated one-room schools; it also houses the functionaries of the Township of Burlington, these spaces served by a separate entrance, and the assembly room doubles as meeting hall for many local functions.

Classrooms are square, and bilaterally lighted. On an average winter day there is no need for artificial light. Each classroom is painted a different color, all colors kept light. Radiant heating is used throughout — wrought iron piping in the floor slab. Wall finishes are fir plywood; ceilings 1½-in. fiberboard acoustical tile. Ceramic tile is used for floors and walls in toilets; elsewhere floor finish is asphalt tile.

The architects explain the economical construction in a detailed list:

1. There is almost no departure from a strict 4-ft grid modular planning. This, together with a deliberate uniformity of similar elements both in plan and elevation, enabled the builder to precut all the structural elements of the building. The 4-ft modular system also enabled the 4-ft plywood sheets on interior walls to be put in place with almost no excess labor for cutting and fitting, and very little waste material. "In spite of all the arguments pro and con concerning modular planning, this is one job where its economy was proved. We feel that this is largely due to the fact that the module is consistent and uninterrupted."

2. The framing system is simple and uniform. The roof joists for the entire classroom wing were put in place almost overnight. Most of the framing members were so standardized in the detailing that the bulk of the material could be pre-cut in the mill and delivered to the site ready for slotting together. (See isometric detail, p. 157.)

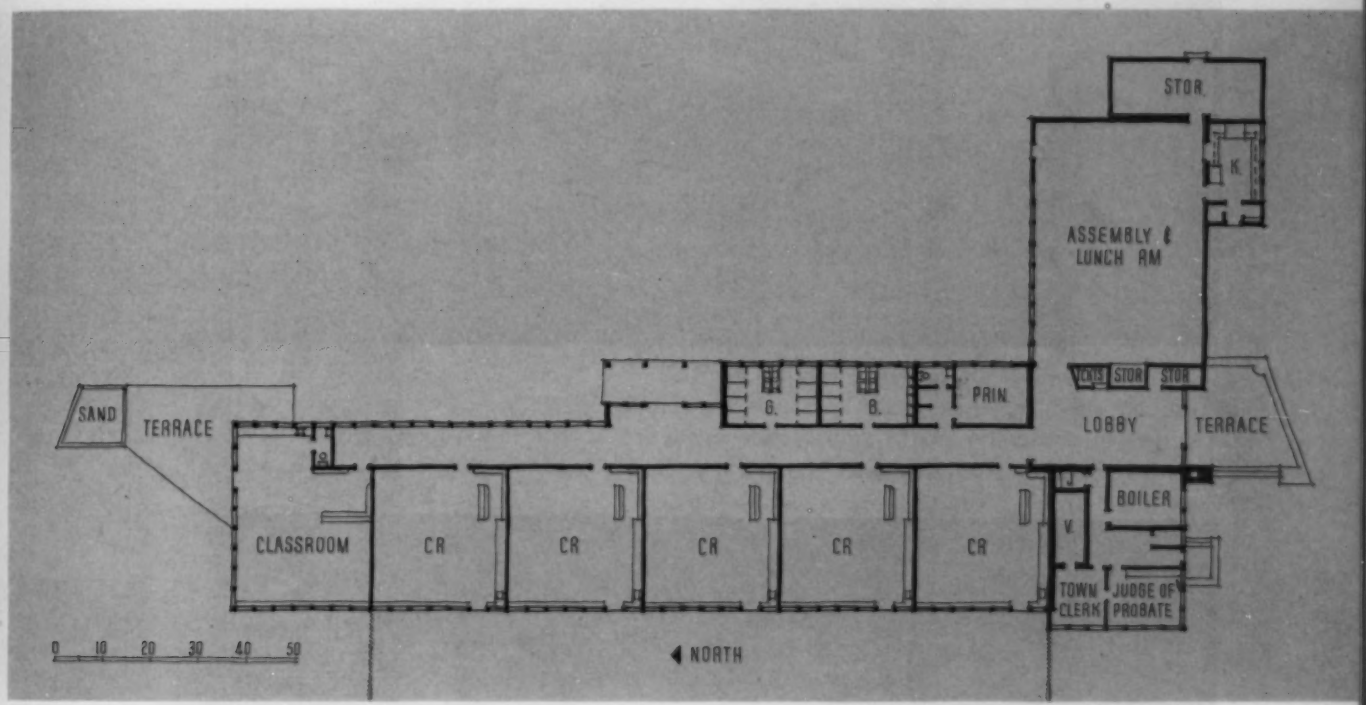
3. The drawings and specifications were complete down to the last full-size detail before the building went out for bids. There was not one change order issued during the entire course of construction.

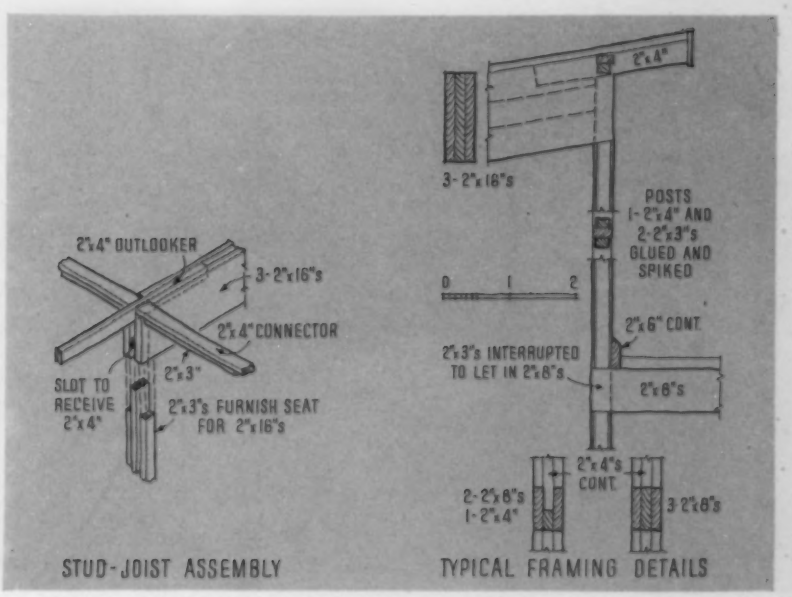
4. Elimination of all dead air spaces and furred-in spaces. Services which do not run under the floor are exposed. Electrical conduit is all exposed, but carefully detailed in wire mouldings so as not to be offensive visually.

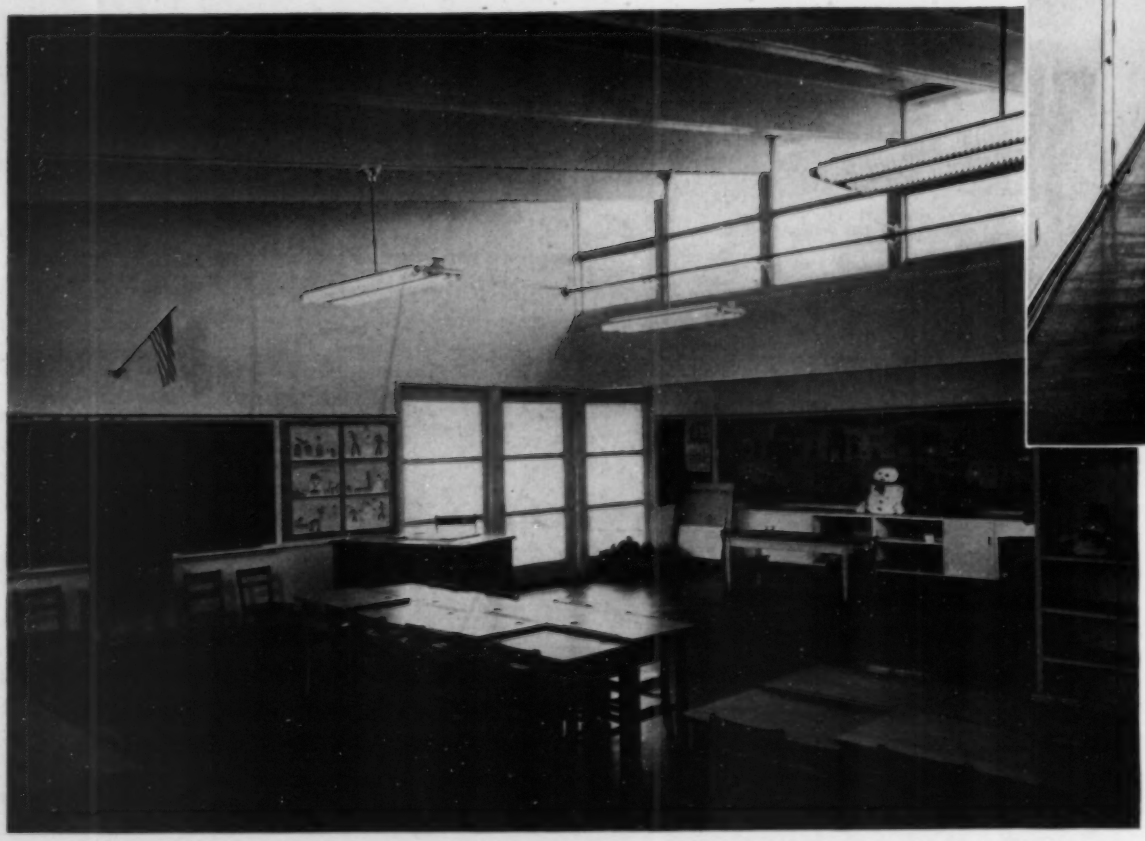
5. Savings in plastering and masonry. "The ⅜-in. plywood finish in corridors will hold up sufficiently well under hard abuse, although is admittedly harder to keep clean than tile or masonry. We feel that the consistent elimination of plaster throughout the building had an economical bearing overall."

6. "The bilateral ventilation in classrooms enabled us to eliminate mechanical ventilation in those rooms. The only rooms mechanically ventilated are the toilets, the assembly room and the kitchen."

DESIGNED FOR ECONOMY







7. The lower-than-average ratio of operating sash to fixed sash, and the consistency of size of operating sash and type of hardware.

8. Elimination of long runs of piping for drainage of individual classroom sinks, by draining each sink into individual dry wells.

9. "In this particular case the use of wrought iron pipes in the floor slab for radiant heating was more economical than the conventional heating system with its attendant long runs of pipe trenches."

In addition to these economy features, the architects list some items that added more than normally to the cost of the building:

"1. The brick veneer used is not a common brick, but a special hard burned brick, laid up in a special bond.

"2. Throughout there is more than average built-in equipment.

"3. The roof is a five ply 20-year bonded roof.

"4. The plywoods used were selected for grain and soundness.

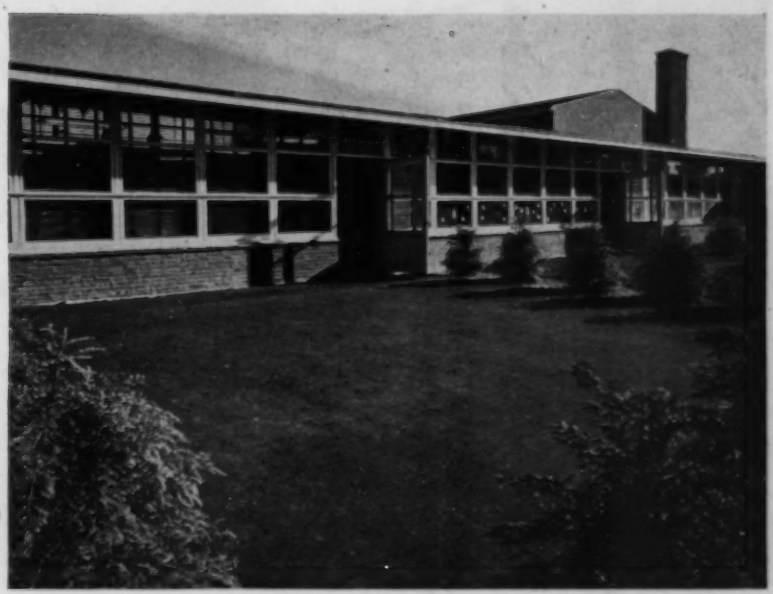
"5. Most of the framing skeleton is exposed and all framing members were selected for straight grain and freedom from knots.

"6. The assembly room has an excellent system of mechanically controlled tempered air changes.

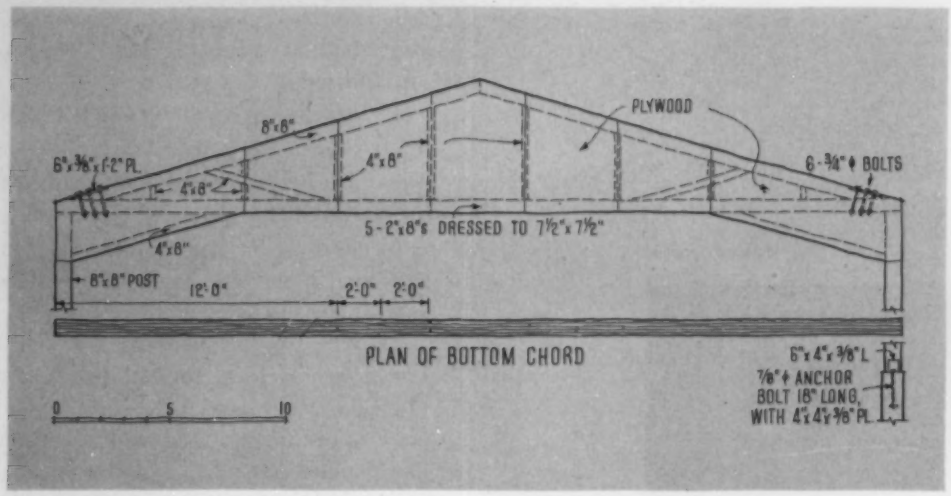
"7. Each classroom has two exits, one of which is to an outdoor classroom extension.

"8. Each classroom has an individually enclosed (by hemlock hedges) outdoor extension. This feature, in the Connecticut climate, was something of an experiment, but has proven hugely successful. They are used for overflow classroom activities not only in the mild fall and spring, but also when there is snow on the ground. The first grade class has its own segregated playground, adjacent to its classroom for easy supervision."

Joseph W. Molitor

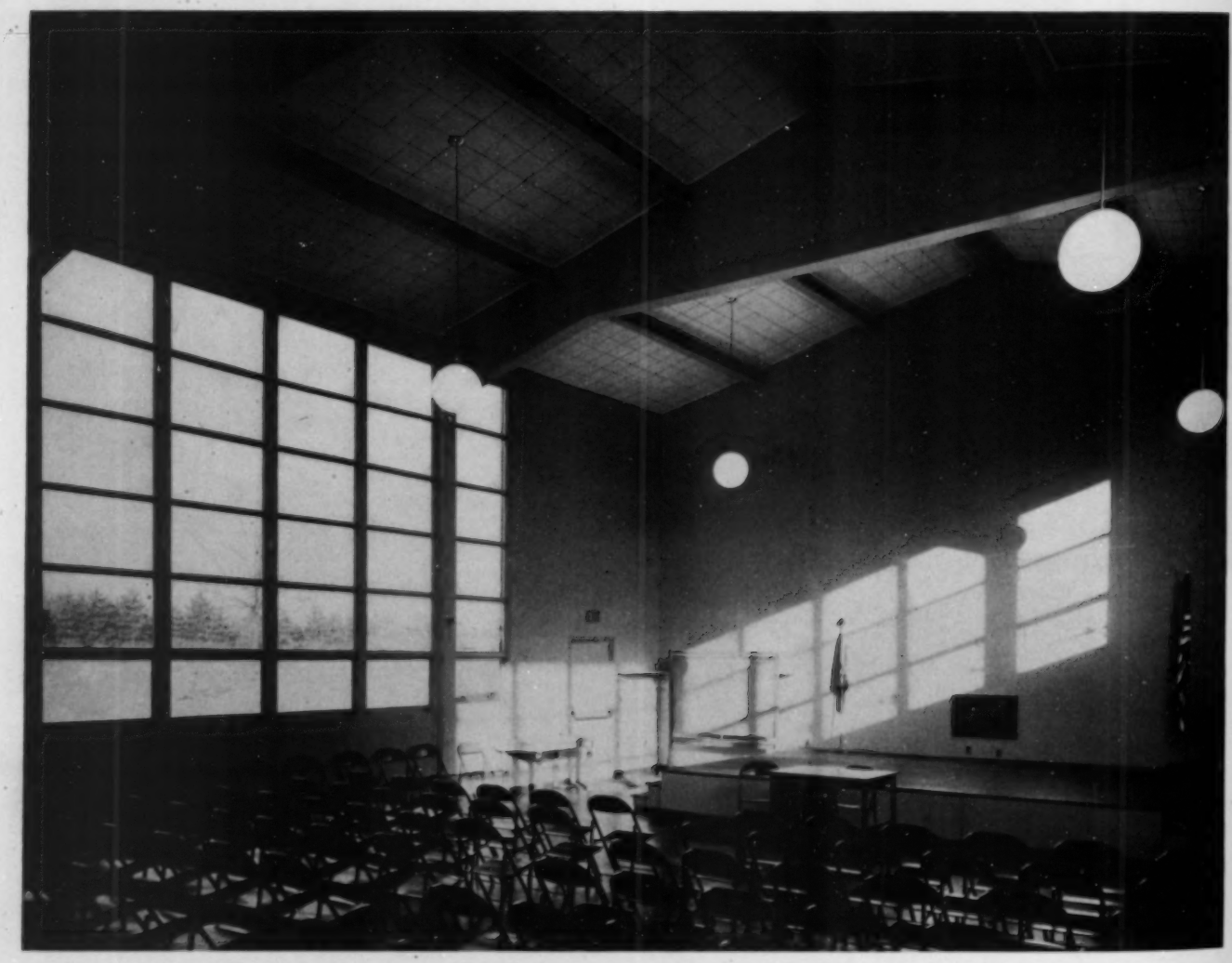


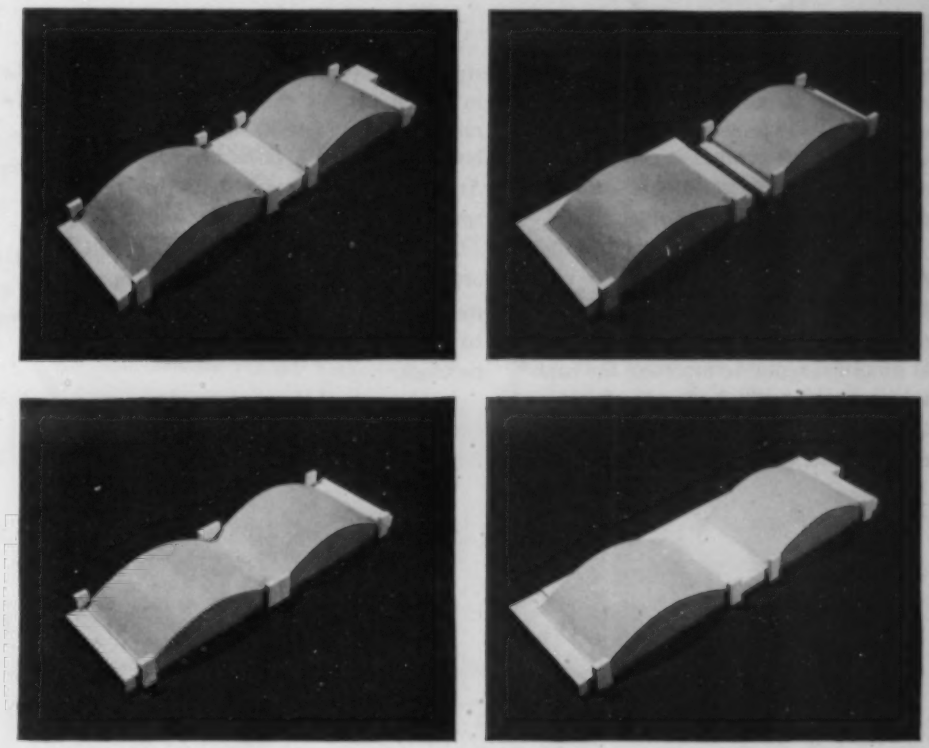
Burlington School classrooms are square, bilaterally lighted, with single-loaded corridor (above). Each grade has its private outdoor classrooms, set off by evergreens (right)



Simple wood framing contributed much to the economy of Burlington school. Multi-purpose-community room is spanned by boxed wood truss; plywood covering acts as stiffener

Joseph W. Molitor





These models show some of the designs possible by varying the size and location of the lean-to's, used for offices and shops. At first only two hangars were contemplated, but a third was found necessary. Upper left photo shows the double-entry type chosen for N. Y. International Airport. (Three hangars and four lean-to's are actually being built.) The prototype design can be varied to accommodate overhaul, line maintenance and storage according to the anticipated end usage

WORLD'S LARGEST STEEL ARCHED HANGARS

The Port of New York Authority develops a prototype design . . . elevated arches made it possible

Roberts and Schaefer, Structural Engineers — ***Lorimer and Rose, Architects***

BY JUNE, three of the world's largest steel arched hangars will be completed at New York International Airport. Each of the hangars, with a clear span of 300 ft and depth of 219 ft, will be large enough to accommodate six Douglas DC-6 transports or four double-decked Boeing Stratocruisers.

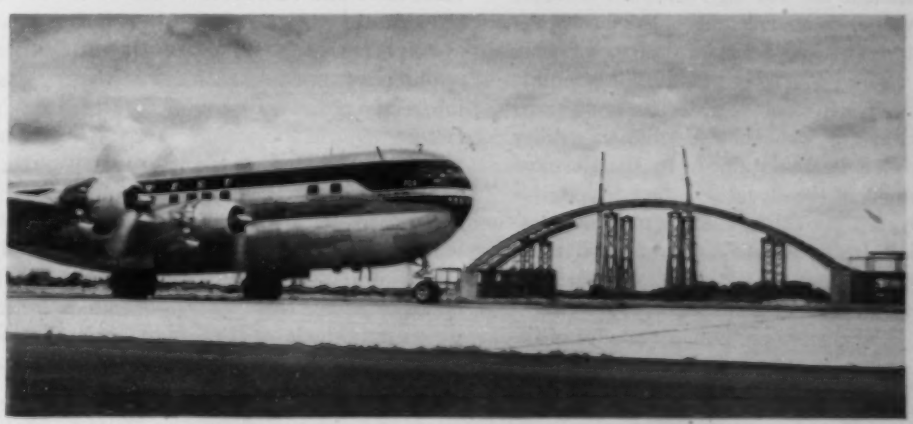
During preliminary discussions and design studies, it was impossible to specify exactly how the hangars would be utilized, or what size or combination of aircraft would be housed — so the basic design needed to be versatile. Another prime functional requirement was that the design of the hangar proper should be a standardized unit that could be repeated and adapted to varying foundation conditions for future expansion.

The hangars had to be designed so that they could accommodate any one or a combination of three functional operations — overhaul, line maintenance, and storage, although the problem of storage was considered of little importance because the hangars will be used for aircraft operated by commercial airlines.

Prototype Design

Stemming mainly from these requirements came a prototype design, consisting of the main hangar as a standard unit onto which many different lean-to combinations can be incorporated for offices and shop space. The arches were designed with an elevated springing line which allows lean-to's to be built on the sides as well as on either end, besides providing more head room. As an example, if one basic unit were required to accomplish overhaul work, then two 100-ft lean-to's could provide the neces-

Photos courtesy The Port of New York Authority



One of the planes which will soon be using the new hangars at N. Y. International Airport taxis down the runway in front of one of the steel arched units

sary shop and office space. If only line maintenance is to be done, one basic unit with a 40-ft lean-to on one side would be needed. Models in the photos on the previous page illustrate several possible arrangements.

Other functional requirements that evolved for the prototype hangar were that: the hangar, of permanent type construction, would be used long enough at a normal rental to amortize the capital investment; the hangar would have to house completely the largest commercial aircraft under construction or "on the board"; the dimensions and layout of the hangar must be such that it could be constructed in either steel or concrete.

Designs were prepared and bid on for both types of construction. The lowest bid was for the steel construction, although the bid for reinforced concrete was close enough to this to be competitive for this particular design.

The underlying premise for alternate designs in structural steel and reinforced concrete was that identity in utility value be maintained. In the development of the structural steel design, this meant providing for external fireproofing. In the lean-to's, conventional methods are used; in the hangars a suspended vermiculite ceiling can be provided.

Exhaustive preliminary studies of the structural systems to be incorporated in the structural steel design and the reinforced concrete design were made before the adoption of basic dimensions. An economic appraisal of varying rise-span ratios and arch spacings was made. There were functional limitations on the arch spacing, since the spacing must permit the conversion from double-ended to single-ended hangars without basic redesign.

In the case of the structural steel design, the various arch types (hingeless, 2-hinged and 3-hinged) were investigated, in addition to other factors that were involved in the concrete design. Choice of the type of arch also influenced the cost of bracing and purlins.

A complete preliminary investigation was made to determine the most economical lean-to framing for the structural steel and reinforced concrete designs. In the case of structural steel, the systems considered had to meet the same requirements for fireproofness as those inherently possessed by reinforced concrete.

After exhaustive studies with various hangar designs, and construction of numerous model hangars in which the parking and maneuvering of model aircraft were investigated (see drawing, opposite page), these basic dimensions were established:

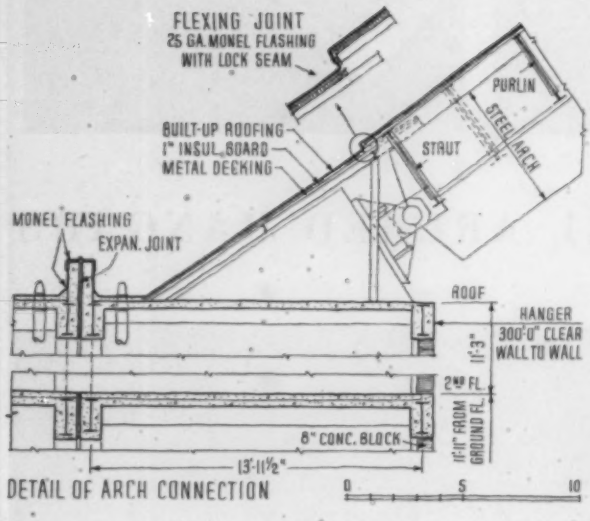
Basic Hangar Dimensions Required

Width	**300 ft**
Depth	**219 ft (to outside of masonry walls)**
Min. clear height at center	**62 ft**
Door height	**40 ft**
Tail Door	**provides 62 ft clear opening**

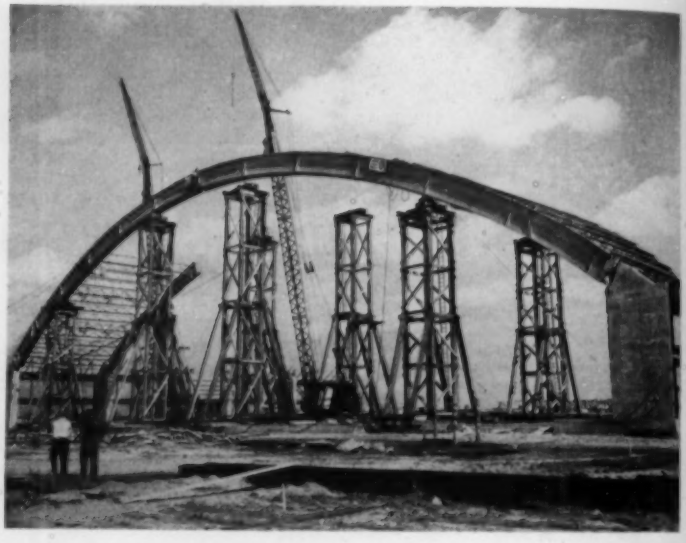
To provide the most flexible utilization of the hangar area and to effect a considerable saving in the required area per aircraft, the double-ended design with sliding doors opening onto their respective parking aprons was selected.

The aprons provide parking for eight aircraft having a turning circle of 175 ft or 11 of the smaller type aircraft having a turning circle of 150 ft. The aprons are designed for aircraft having a maximum gross load of 300,000 lb.

The new hangars are located in the north central section of the 4900 acre airport near the two existing hangars. From west to east, the lineup is: the west lean-to, 41 ft wide; Hangar No. 3 — 300 ft; west-center lean-to, 103 ft; Hangar No. 4 — 300 ft; east-center lean-to, 38 ft; Hangar No. 5 — 300 ft; and the east lean-to, 65 ft.



DETAIL OF ARCH CONNECTION



Lean-to's can be built on the sides of the hangar since the arches are anchored at the top of concrete columns (at right in the photo). Structurally, 15 ft of the lean-to's belongs to the hangar because of the column width necessary. An expansion joint is used, therefore, between this section and the rest of the lean-to. Note the flexing joint to take care of arch movement

Steel Arch Design

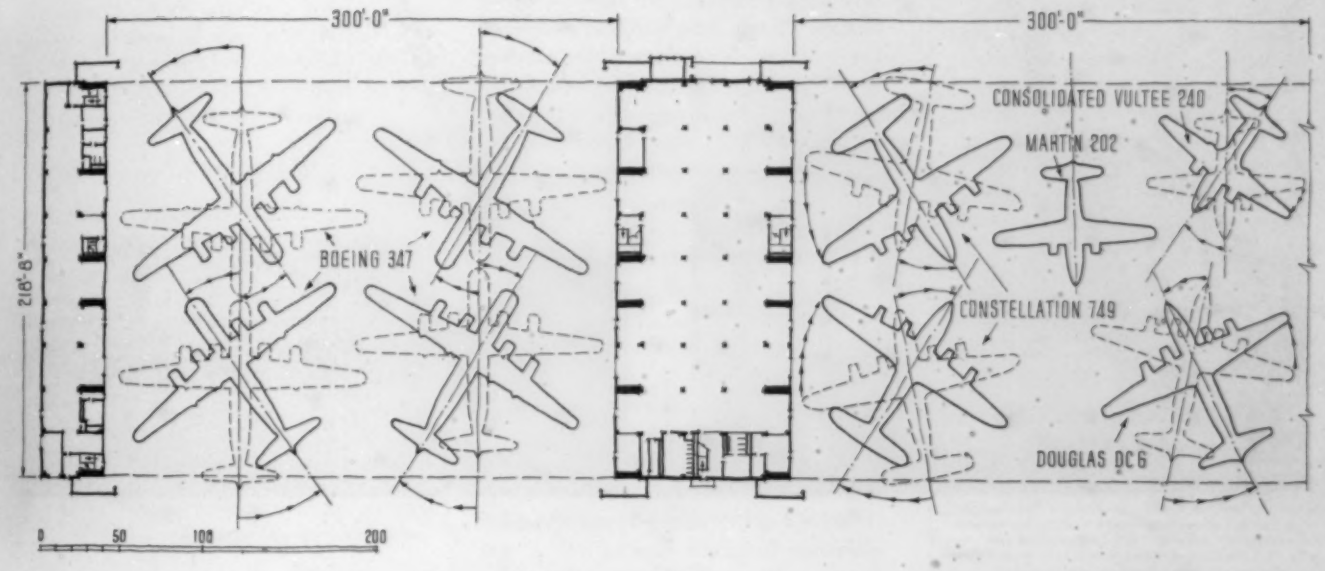
The arches have a clear span of 300 ft, are spaced longitudinally 48 ft on center (except two middle arches are 24 ft) and have a rise of 49 ft, 11 in. This gives a clear height at the center line of the hangar of 75 ft. The arch is a three-hinge, built-up, plate girder type.

The depth back-to-back of the flange angles remains constant at 5 ft 7 in. The end pins have a diameter of 10 in. while the pins at the crown have a diameter of 8 in. The webs are stiffened at mid-depth by two angles. There are spread footings are used for the exterior columns and combined spread footings for the interior columns. No tension ties are used. The footings in the edge lean-to's are trapezoidal in plan and vary in depth from 10 ft to 3 ft. The footings in the center lean-to's are rectangular in plan, having a constant depth of 10 ft under the west-center lean-to and 5 ft under the east-center lean-to. Most of the lean-to columns are supported by the arch footings.

The hangar floor slab which rests on compacted limestone varies in thickness foundation. The wind loads on the doors and front closure walls are transmitted by steel trussed frames to the first two arches. All the doors are motor operated and electrically interconnected. Provisions are made for emergency hand operation.

Lean-to's

In the case of all lean-to's, 15 ft of width in a structural sense belongs to the hangar structure, since this is the width necessary for the large columns supporting the arches. An expansion



Recommended hangar usage is illustrated above. A functional requirement of the prototype design was that the hangar should house the largest aircraft under construction or "on the board"

two field splices on each arch.

The area between the arches is framed with built-up truss purlins and struts at 6 ft 7⅝ in. on center, top chords of which bear on the top of the arch thus giving a smooth surface on the outside of the hangar roof. The framing is laid out so that the arch is well braced at the top flange, and along the center of gravity of the arch by means of K-bracing. The purlins and struts are braced by means of cross frames. Hangers are used to suspend framing for the hung ceiling, lights and the sprinkler system. Metal decking is used for framing between the purlins.

The arch hinges at the springing line are anchored to concrete columns. These columns rest on pedestals, which in turn carry the load to the footings. Individual from 11 in. to 14 in. at the expansion joints. The six service pits in each hangar floor have compressed air, electrical outlets and drains.

There is a set of doors (12 leaves) at each end of the hangars with a clear opening 40 by 285 ft. Also at each end of the hangar there is a tailgate door 22 ft high and 33 ft 7 in. wide to provide clearance for planes with large tail sections. These tailgates are of the turnover canopy type. To prevent frequent opening of the large hangar doors, there are two vertical lift doors, 8 by 8 ft, and one pilot door built within the main doors. The upper portion of the hangar doors is glazed to produce even distribution of daylight over a large interior floor space. Hangar doors roll on tracks embedded in the concrete joint is provided, therefore, separating this 15 ft wide section of the lean-to from the remaining lean-to structure.

A boiler plant 73 ft wide and 50 ft long is provided on the roof of the west lean-to.

Modular Layout. The selection of a constant 24 by 24 ft structural bay with 15 by 16 in. columns throughout lean-to's permits all types of masonry and sectional partitions to be erected with minimum field cutting and adjustment. Floor-to-floor heights, beam depths, etc., were selected to accommodate standard course heights of commonly used materials such as glazed structural tile, concrete block, etc.

Continuous strip windows with mul-

lions on 4-ft centers permit ready subdivision of lean-to areas in space multiples of 4 ft, with partitions at all times coinciding with mullion locations.

The steel beams of the lean-to's are spaced 8 ft on center, coinciding with each alternate mullion. Concrete slabs topped with lightweight concrete fill span the beams for the length of the hangar.

In order to produce watertight conditions and good appearance, cavity type exterior walls are used. These have a 4-in. exterior withe of gray-buff facing brick in 4 by 4 by 12 in. nominal modular size, a 2-in. cavity, and an inner 4-in. withe of 8-in. concrete block.

Heating and Ventilating

To insure optimum floor-level temperatures, it was decided to use a radiant heating system, circulating water at approximately 140F. Each hangar contains about ten miles of 1½ in. piping, spaced on 18-in. centers and buried 6½ in. below the floor. The panels are of the grid type in which the water is circulated from a supply header to a return header and not through a continuous coil. This eliminates long, continuous runs of pipe which would require high pumping heads and possibly cause circulating difficulties.

Pipe coils on 10⅞-in. centers are provided in the door pockets and directly beneath each door track rail. Plans provide for the future installation of four unit heaters per hangar, one at each corner, to take care of the pick-up load when the doors are open during cold weather, if operational experience indicates that this arrangement is necessary. Steel-fin-and-tube type radiation, completely enclosed in enameled sheet steel cabinets, is used in the edge lean-to's.

Ventilation is provided for interior zones of second floors in the edge lean-to's and first and second floors of the center lean-to's. The ventilating equipment rooms will be located on the roofs of the lean-to's. Mechanical engineers were Karsunky, Welles and Gooch.

Fire Protection

A complete local fire alarm and sprinkler system is provided for the entire building inasmuch as the building location is isolated in relation to other parts of the airport.

The sprinkler system for the hangar is a deluge-type divided into six separate zones. The automatic control valves provided for these six systems are installed in the edge lean-to's. The systems are automatically operated from heat-sensitive devices installed in the ceiling.

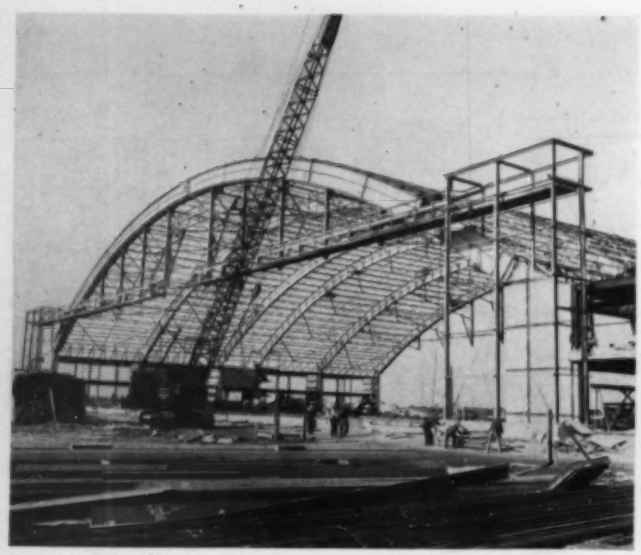
The first floor of each lean-to is provided with a wet-type sprinkler system. Provisions also have been made for future second-floor sprinklers.

Lighting

The hangars are designed with high-bay lighting fixtures, which project the light down to the floor surface where it is required with maximum efficiency, considering the high mounting which must be utilized. These fixtures will be provided with the disconnecting and lowering type of hanger.

Fixtures will be provided with two types of lamps: a standard incandescent lamp and a mercury vapor lamp, to produce an average uniform intensity of 38 footcandles. The mercury vapor lamps in combination with the incandescent will produce a bluish-white light of good color and quality.

Floodlights are provided over each hangar door to illuminate the apron area in front of the doors. Obstruction lights are provided on top of the roof of each hangar building and on the outside parapet wall of each edge lean-to. The control of these obstruction lights is designed to be automatic through photo-electric control units. They switch on when daylight drops to 35 f-c and off when it raises to 55 f-c.



Structural steel framing almost completed for one of the hangars, including end framing, door pockets and upper door guides

A unique supporting rig handled by the crane moves radiant heating grids into correct position before concrete floor is poured

ARCHITECTURAL ACOUSTICS

Article 1: Basic Planning Aspects

*By Richard H. Bolt and Robert B. Newman**

This is the first in a series of articles by the authors, planned to give the architect a general perspective of acoustics — an orientation to the special language and techniques. They are not intended to replace a comprehensive course or book for one who wishes some mastery of the subject. But with the background provided, the architect will find more meaning in the growing literature on acoustics.

The Scope of the Field

Acoustics has been discussed in the architectural press from time to time (1) † and an increasing amount of technical information is available in manufacturers' literature, and in publications covering standardized acoustical values of materials and structures (2,3).

". . . the architect will find more meaning in the growing literature on acoustics."

All of these sources provide information that is useful when properly interpreted, but correct utilization of the engineering data, as in any branch of engineering, requires some background knowledge of the subject. Unfortunately the study of acoustics has been notably absent in architectural education, and few practicing architects have had an opportunity to acquire a detailed knowledge of this field. Yet almost every project undertaken by the architect involves some acoustic problems.

Often these problems are not recognized, at least not explicitly, by either the architect or the client. Of course an auditorium or broadcast studio needs special acoustic attention; but few people realize that the apartment house and the office building pose equally important acoustic problems. Many of these problems can be handled with little if any additional expense for acoustics itself. In a sense, every element of design and construction has some influence on acoustics; the important thing is to understand how much and what kind of influence these elements have.

We must learn first to recognize the various kinds of acoustic problems and their relation to the general functioning of buildings. Next we should consider the ways in which acoustic problems can be solved or anticipated in the basic planning: in the selection and utilization of the site, in the horizontal and vertical inter-relation of spaces within the building, in the general choice of materials and construction, and in the over-all shapes of rooms. These questions of functional analysis and planning are discussed in this article. Further articles will consider specific methods for achieving good acoustics in buildings. Their sequence follows more or less the logical order in which the architect should deal with acoustics as he develops a project.

Basic Problems and Criteria

Although the practice of acoustics involves a wide variety of special problems and techniques, the basic reasons for acoustical design are simply:

(a) to provide a satisfactory acoustic environment, or

(b) to provide good hearing conditions.

In a hospital room, for example, the designer is concerned primarily with the problem of providing a quiet environment, while in a recital hall he is concerned principally with the hearing problem. Similar methods may be used in handling these two kinds of problem, though in general their requirements and treatments differ. For these reasons it is logical to study the two types separately, as will be done in the second and third articles in this series. But here we shall learn to recognize the problems and their relation to general planning.

CRITERIA FOR AVERAGE NOISE LEVELS IN UNOCCUPIED ROOMS

	Decibels
Radio, recording, and television studios	*25–30*
Music rooms	*30–35*
Legitimate theaters	*30–35*
Hospitals	*35–40*
Motion picture theaters, auditoriums	*35–40*
Churches	*35–40*
Apartments, hotels, homes	*35–45*
Classrooms, lecture rooms	*35–40*
Conference rooms, small offices	*35–45*
Court rooms	*40–45*
Private offices	*40–45*
Libraries	*40–45*
Large public offices, banks, stores, etc.	*45–55*
Restaurants	*50–55*
Factories	*45–80*

These recommended acceptable levels are "weighted"; that is, they are the levels measured with a standard sound-level meter incorporating a 40-db frequency-weighting network (compensates for the ear). Table of noise level criteria, reprinted from Acoustical Designing in Architecture, *Knudsen and Harris, p. 221, with permission of John Wiley and Sons, Inc.*

Factors Influencing Acoustic Environment. A satisfactory acoustic environment is one in which the character and magnitude of all noises are compatible with the satisfactory use of the space for its intended purpose. For example, a library reading room can be a difficult place for study in the presence of distracting noises. These same noises might be quite acceptable in a large business office; but here again there are limits of noise intrusion beyond which the workers would find it difficult to maintain efficiency and composure. There is thus a wide range of acceptable background noise levels in rooms, as indicated in the table above.

* *Acoustics Laboratory, Massachusetts Institute of Technology, and members of the consultant firm Bolt, Beranek and Newman.*

† *Numbers in parentheses refer to items in bibliography.*

The noise level specified in this way is usually taken as the primary specification of an acoustic environment, but it is not the only one that counts. It is sometimes important to consider the noise levels at several frequencies instead of using the values given in the table which represent an average over a wide range of frequencies. It is sometimes important to consider the sound reflecting properties of the rooms because an extremely reverberant space can be annoying for some purposes even with relatively low noise levels.

The tolerance to noise depends also on its quality (high pitched whine, low pitched rumble, sharp rasping noise, etc.) and on its dynamic characteristics (continuous, intermittent in a regular rhythm, intermittent in unpredictable bursts, etc.). These characteristics are difficult to define, and their influences on annoyance and fatigue are not fully understood today; but extreme cases are easy to spot. To some extent the evaluation of these characteristics is simply a matter of common sense and experience. One obvious rule is that the more unexpected a noise, the more likely it is to be a disturbance. The steady drone of distant traffic giving 45 decibels in a hotel room would not be especially disturbing; but the same noise level from a siren will attract immediate attention. There will be cases in which the noise quality influences acoustic design. In particular the noise reducing elements such as insulating walls and sound absorbing materials should be effective in the predominant frequency ranges of the noise to be controlled. Keeping these points in mind, then, we can use the table as a partial checklist for noise control problems to be considered in each project. The architect may find it useful to expand this list from personal experience.

Factors Influencing Hearing Conditions. The room designed for hearing music or speech may already have been treated for environment control, in which case a start has been made on the listening problem. But the requirements for good hearing are more exacting, and their attainment is frequently more complicated. In general we must satisfy four requirements:

(1) Background noise must be low enough not to interfere with the desired sounds of speech or music.

(2) The desired sounds must be sufficiently loud.

(3) The reverberation time must be short enough to avoid excessive overlapping of successive sounds and yet it must be long enough to provide some blending.

(4) The sounds must be distributed properly throughout the room to give a desirable degree of acoustic uniformity and to avoid disturbing echoes, undue focusing, or islands of low intensity of sound.

Sketches by Sol Ehrlich

"Planning for Noise Control"

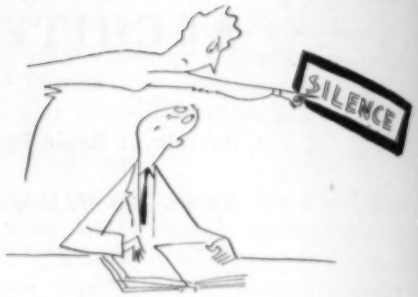
Planning for Noise Control

We note that the background noise is an important factor in both the environment aspects and the hearing properties of the rooms. General criteria for listening rooms are included in the table. In speech rooms special attention must be given that particular range of frequencies in which a masking noise can reduce the intelligibility of speech. In the case of music a much wider range of frequencies is important

As already mentioned, the detailed criteria for acceptable amounts and kinds of noise will differ depending on the purposes of the room, but the general methods of achieving any of these criteria are common to all purposes. Let us now consider these noise control measures as related to general planning.

Achievement of low background noise in a room obviously will be aided by locating the room as far as possible from noise sources, both inside the building (ventilating machines, shops, gymnasiums, etc.) and outside (highway, railroad, airfield, noisy factory, etc.).

Frequently the site selection is beyond the architect's control. But usually he has considerable influence on the horizontal and vertical layout of the building, and this should be scrutinized for sensible segregation of noisy areas. Ventilating equipment and bowling alleys should not be placed immediately under or over an auditorium if this can be avoided. See if the machine shops or testing laboratories can be placed in a different wing from the offices and conference rooms. The play room should be removed from the bedrooms; the band room from the library and study halls. Noise control can sometimes be helped by the judicious use of dead areas —



". . . a library reading room can be a difficult place to study in the presence of distracting noises"

storage spaces, ~~corrido~~, etc. — as buffers. Noise sources within the building can often be controlled locally, by the housing of machines and quieting of rooms containing noisy devices. The selection of quiet mechanical equipment in the first place is a part of rational planning.

When all possibilities of noise control by site selection, separation planning, buffer areas and noise source control have been fully utilized, we are ready to determine the expected sound levels (and perhaps other characteristics) of all noises immediately surrounding each room requiring protection. The difference between these noise levels and the background criterion for the room (calculation methods to be discussed in the second article) gives the amount of insulation that must be provided by the shell of the room itself.

Thus the second general phase of noise control leads to problems involving structures and materials. In general, the degree of noise insulation of a wall increases with weight. Composite structures, particularly if they include air spaces, are generally superior to homogeneous walls of the same weight. For example, an 8-in. brick wall has an average transmission loss of about 50 db, while two 4-in. brick walls spaced 4 in. apart give nearly 60 db which is more than the value for a solid 12-in. brick. Laminated walls of impervious outer layers, separated by materials of differing density and compressibility (fiber boards, soft blankets, light weight fill, etc.) are usually 5 to 10 db better than homogeneous walls of the same weight.

Regardless of weight, however, a wall must be highly impervious to air flow through it, if it is to give a high degree of sound insulation. As a striking example, ordinary thin walls of unplastered clay tile or porous cinder block rate as "poor" insulating walls — inadequate for inter-office privacy, for example. But

the same walls tightly sealed with even a thin coat of plaster on each side are in the "good" range of 35 to 40 db transmission loss.

The same rule applies to air leaks around doors and windows and through ventilating openings. An ordinary flush door with a threshold crack has negligible transmission loss (perhaps 10 db); with tight rubber gaskets all around it can reach a rating of 25 or 30 db which gives adequate privacy in many cases. (Note in passing that the transmission loss of a door or window need not be as high as that required for the wall as a whole if the door or window occupies only a small fraction of the area.)

It is very difficult with a single door to obtain more than 35 or 40 db even with elaborate precautions in construction, gasket sealing, and tight fitting hardware. So when we have a need for higher insulation through entries, we must go to double doors or enclosed sound locks, as frequently used in broadcast studios.

Thus the design of a sound insulating enclosure involves more than the choice of a wall structure with adequate transmission loss. Attention must also be paid to proper detailing of all joints, divisions, and inserted elements. Many an expensive wall construction has been vitiated acoustically by short circuiting air leaks.

Although such short circuits are readily comprehended, the equally dangerous by-passing by structural paths is often overlooked. The impact of heels on a floor sets up vibration which in turn gives rise to sound radiated into the space below. The degree to which a given floor structure thus responds is measured by its impact noise transmission loss. Impact noise transmission loss values for many types of floors are given in BMS 17 (see Ref. 2). A bare concrete floor slab transmits impact noise as efficiently as any commonly employed structure and is therefore frequently used as a reference for measuring impact noise. Taking this bare slab as having zero loss, the addition of a carpet improves matters by 5 to 10 db; and the addition of a resiliently floated finish floor can provide a structure with as much as 20 or 25 db impact transmission loss.

Now, the structural vibration set up by impact can also be transmitted to other parts of the building along the slab and through the structure. As a matter of fact, even air borne sound striking a wall always imparts at least a small amount of motion, and once this vibration is in the structure it can travel throughout the building. This structure-borne vibration is "telephoned" readily through a continuous rigid frame of steel or concrete; less efficiently through unhomogeneous masonry or frame constructions; and blocked almost entirely by structural breaks which are sealed, at most, by a soft mastic. Sound passing between two adjacent rooms through the floor slab may exceed the amount transmitted through a common wall. This sound transmission sets an upper limit to the amount of sound isolation that can be achieved between these rooms, regardless of the effectiveness of the wall between them. This limit is usually about 45 to 55 db, depending upon the type of construction. Above this limit special detailing must be used to break paths of transmission.

Sometimes the detailing of high sound insulation in a building necessitates wall and floor structures of uncommon thickness. It may be necessary to provide floated floors or ceilings, or an isolated inner shell around a room. This will not generally occur if less than 45 db airborne sound transmission loss is needed; but above 55 db the structure is almost certain to be of increased thickness. This situation gives rise to one of the most important reasons for anticipating noise control requirements in the planning stages. More than one building has been doomed to inadequate noise control simply because the floor levels and room dimensions were irrevocably fixed (or even the structure erected) before thought was given to acoustics.

Planning for Adequate Loudness

Provision of sufficient loudness is not a problem in small rooms (less than about 25,000 cu ft). In rooms of this size, an average person talking normally can be heard very well throughout the room if the other conditions for good hearing are satisfied. At the other extreme, in very large rooms (more than approximately 250,000 cu ft) the average person simply cannot generate enough acoustic power to fill the room, so he needs the aid of a sound amplifying system. In rooms of intermediate size an amplifying system may or may not be necessary, depending on the skill with which the other influencing factors of background noise and sound distribution can be controlled.

The loudness problem is somewhat different in the case of music, because ensembles of musical instruments usually can be made large enough for satisfactory hearing even in large auditoriums. Solo voices may require amplification. but only under unusual circumstances is amplification needed for the orchestra.

Whenever we recognize the possible need for a sound reinforcement system (and of course such systems are automatically required in motion picture theaters) we should keep in mind that the loudspeakers should be located in accordance with well established principles, and that the system should be properly integrated with the design of the room. In most cases, a single group of loudspeakers located centrally some 20 or 30 ft above the stage will provide optimum hearing condition with greatest realism. There are recent developments in stereophonic reproduction using two or more separate groups of loudspeakers fed independently from separate microphones.

In fact, the engineering of sound reinforcing systems with high fidelity and realism has advanced considerably in recent years. It is now important for architects to understand these potentialities and to incorporate the required components in the basic design of the room

Planning for Optimum Reverberation

The reverberation time is a measure of the prolongation of sound in a room after the source has stopped; specifically, the time in seconds for sound to decay 60 db. The optimum value of reverberation time depends on the volume

"Planning for Adequate Loudness"

of the room and on the type of sound to be heard. In general, the working range runs from about ½ second for very small speech rooms up to 2½ seconds for very large concert halls or churches. Detailed criteria will be discussed in a later article.

The reverberation time that exists in a room is determined by the volume of the room and by the sound absorptive properties of the finishes, furnishings, people and the air in the room. The

amount of sound absorption is specified in terms of absorptive units; the calculation of the number of units and then of the reverberation time is an essential step in the acoustic analysis, but one which we can postpone here. One point to bear in mind at this stage is that reverberation control does not always require the use of special acoustic materials, though they are generally needed in some amount. In moderate sized rooms with a small volume per person, with upholstered seats and perhaps with wood paneled walls, the optimum reverberation time already may be achieved.

It is important to know that the reverberation time must be satisfactory over a wide range of frequencies and not simply at one frequency such as 512 cps, as is too often believed to be the case. A common form of frequency unbalance is excessive reverberation at low frequencies (below 250 cps) and inadequate reverberation at high frequencies (above 2000 cps). The effect is "boomy" and yet "dead" and music hearing is particularly poor. Usually this condition is attributable to inadequate low frequency absorption; conventional acoustical materials less than 1 in. thick and mounted directly on hard surfaces fall off rapidly in absorption below 250 cps. Increased low frequency absorption can be obtained by using thicker materials, or deep air spaces behind porous materials, or specially designed thin panels, or acoustic resonators. All of these measures require greater depth than is normally allowed for acoustic treatment. Thus it is important in the planning stage to recognize those cases in which large amounts of low frequency absorption may be needed and to allow adequate depth in walls and ceilings for this treatment. A space of 4 to 6 in. is usually enough for this treatment, and yet one frequently sees cases in which previous design decisions have made it impossible to apply more than 1 in. thickness of absorptive treatment.

Acoustical materials are made in a wide range of surface textures, and many possibilities in surface design and color are possible by judicious combinations involving available finish materials. The architect who is familiar with these possibilities, or better yet with the basic principles from which new combinations can be conceived, will find that the treatment for reverberation control can be made a part of the design rather than a necessary evil which must be applied as "correction."

". . . vibration is telephoned readily through a rigid frame of steel or concrete . . .

. . . blocked almost entirely by structural breaks . . ."

Planning for Sound Distribution and Room Shape

The distribution of sound in a room is determined principally by the over-all shape of the enclosure and the smaller scale breakup of the surfaces. Amounts and locations of absorbing materials also influence sound distribution to some extent. For proper distribution, sounds from persons speaking or singing, instruments, and loudspeakers should be projected to all the listeners with fidelity and uniformity. The exact meanings of these words are subject to careful definition, but a general understanding can be given at this point by some qualitative statements. There should be no distinct echoes such as come from distant reflecting surfaces. High domes and large expanses of concave wall focus sound annoyingly to certain parts of the room and rob other parts. (Whispering galleries make good sightseeing but poor auditoriums.)

"The impact of heels on a floor sets up vibration . . ."

Excessive space in itself is wasteful of acoustic energy. If monumentality is essential, in a particular room, its inherent acoustic difficulties should be clearly recognized and ameliorated as far as possible in the design. If, on the other hand, the design of a large hall can be generated primarily by acoustic requirements, a high degree of sound conservation and uniformity can be achieved.

Usually volume should be less than 300 cu ft per person and the height of the hall should not be excessive at any point. At the same time if there is a balcony, sufficient height should be allowed in the framing to yield a good balcony shape. The front of the balcony should be pointed or rounded and the underside should slope downward toward the rear. These features eliminate echo reflections from the balcony front, carry reinforcing sound to the rear under balcony seats. Even worse than a horizontal balcony soffit is one which slopes up to the rear. A listener sitting in such a reentrant space feels that he is in another room into which inadequate sound is coming from the auditorium itself. There should be properly oriented reflecting surfaces near the sources of sound. Smaller scale surface irregularities are frequently help-

(*Continued on page 244*)

PLANNING GRADE SCHOOL KITCHENS

Engelhardt, Engelhardt and Leggett, Educational Consultants

TO KEEP operation expenses of school cafeterias at a minimum, the physical layout must permit an orderly sequence of work. Receiving, storage, working and serving areas must be closely related. And at the same time, adequate food service equipment must be provided, properly integrated with the layout.

The architect should plan the cafeteria to serve the two groups of children who will use it. One group will buy lunch there; the other will bring lunch from home and buy milk at school. Congestion will be reduced if a separate line is established for purchase of milk and ice cream only.

Careful consideration should be given to the problem of handling the large quantities of milk used in modern schools — refrigeration, washing and bottle storage.

A double service line is desirable, as speedy service insures a greater number of children buying school lunches.

Receiving and Storage Areas

The door to the kitchen proper must be wide enough to permit the movement of all equipment. A protected space for unloading and receiving supplies adjacent to the storeroom and kitchen is essential. A table and platform scales should be located here so that the deliveries may be weighed and checked before they are stored or taken to preparation areas.

The storeroom for canned and staple foods should be ventilated, rodent-proof, easily cleaned and protected from theft by a door which can be securely locked. Metal shelving is desirable. For No. 10 cans, shelves 14½ in. deep and 16 in. apart are satisfactory. It is convenient to have one 2-ft shelf at a height of about 42 in., below which bins or metal cans on rollers can be placed. A portable table on casters saves many steps between the storage room and the kitchen.

A walk-in icebox is necessary for the storage of vegetables, sacks of potatoes, etc. Ample refrigeration insures that sufficient quantities of perishable supplies may be ordered and delivered at wholesale prices. There is an increasing use of frozen foods which must be held at a temperature of approximately 5 F, so a frozen food storage cabinet should be provided. (See Table for sizes.)

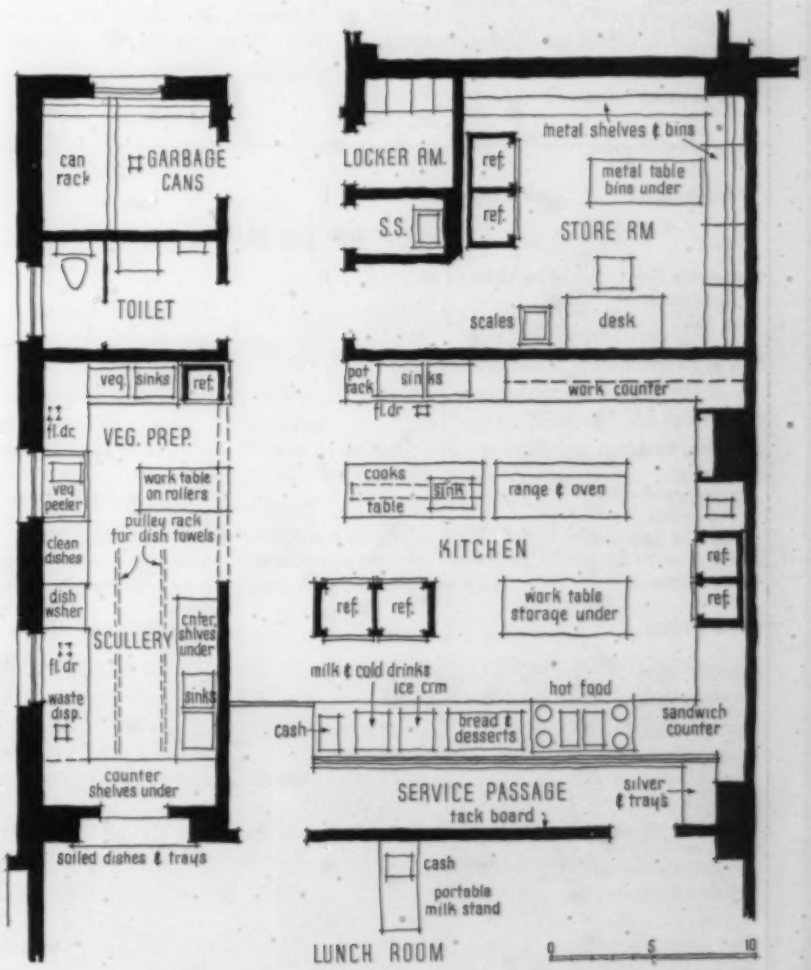
Food Preparation

Sinks. The food preparation area should have two- or three-compartment sinks. The sinks should be stainless metal, welded, seamless, one-piece, with rounded corners and with sufficient pitch to drain quickly. If space permits, each compartment should be 24 to 30 in. long and the drainboards 30 to 36 in. Gate valves should be used instead of plugs.

Potato Peeler. The potato peeler should be set high enough to empty onto the drainboard or into the sink. It should be so placed that it is easy to clean.

Tables. Three tables are necessary — one for vegetable preparation, one for the salad and sandwich preparation and one for use by the cook. Stainless metal table tops and shelves are desirable.

The cook's table should be provided with a rack overhead and a sink. It should have drawers mounted on slides, with roller bearings. Linoleum lined drawers for knives and spoons lessen the noise and protect the implements.



A typical kitchen layout for an elementary school. Designed for Hillcrest Elementary School, San Francisco, Calif., by Day and Michelsen, Architects

Ranges. Either two-section, heavy-duty ranges (each section 36 in. wide, oven below) with solid tops and ovens should be provided or a one-section range with oven plus a two-deck oven in the elementary schools. Larger schools should be provided with three to four range units and the two-deck ovens. A water tap over the range is convenient for filling the kettles.

An electric fan should be installed in the hood to remove heat and kitchen odors.

The vent pipe of all range hoods must be trapped with a grease trap or filter in a manner satisfactory to the local health department. Installation of hoods in which the vent opens directly to the outside without a filter or trap is no longer permissible.

EQUIPMENT FOR VARIOUS SERVICE NEEDS

Equipment	*Dimensions*	No. Units to Serve *75–150*	*150–350*	*350–800*
Heavy Duty Range	36 by 36 in.	2 units, or 1 plus bake oven	2	2
Bake Ovens, 2 deck	54 in. wide by 36 in. deep by 70 in. high		1	2
Steam Cooker, 2 compartment	41 in. deep by 35 in. wide		1	1 (4 compartment)
Potato Peeler, capacity 15 lb	29 in. wide by 20 in. deep	1	1	1
Mixing Machine, 40 to 60 qt		1	1	1
Dishwashing Machine		Single tray	Double tray	Double tray
Slicing Machine	Large table model	1	1	1
Sinks				
Vegetable Sink, 2 compartment	18 by 18 by 12 in.	1	1	1
Slop Sink	24 by 20 by 14 in.	1	1	1
Hand Sink	15 by 12 in.		1	1
Pot Sink *		1	1	1
Tables				
Receiving Table		3 ft by 18 in. by 28 in.	4 ft by 24 in. by 28 in.	6 ft by 24 in. by 28 in.
Pre-preparation for vegetables			4 ft by 24 in. by 36 in.	5 ft by 30 in. by 36 in.
Salad and Sandwich		4 ft to 6 ft by 30 in. by 36 in.	6 ft by 30 in. by 36 in.	6 ft by 30 in. by 36 in.
Cook's Table		6 ft by 30 in. by 36 in.	6 ft by 30 in. by 36 in.	7 ft by 30 in. by 36 in.
Baker's Table			3½ ft by 30 in. by 36 in.	4 ft 6 in. by 30 in. by 36 in.
Refrigeration				
Reach-In Refrigerator		35 cu ft	45 cu ft	2 (45 cu ft)
Walk-In Box		6 by 6 ft	6 by 6 ft	8 by 10 ft
Deep Freeze Lockers		28 by 37 by 38 in. (approx.)	same	28 by 57 by 38 in. (approx.)
Ice Cream Cabinets (for serving lines)		1 (2 hole)	2 (4 hole)	2 (8 hole)
Refrigerator for separate milk service				15 cu ft
Electric Bun Warmer			28 by 37½ by 54½ in.	same

* See text, "Pot and Pan Sink," this page.

Pot and Pan Sink. A pot and pan sink located near the range saves steps. It should be built with two drainboards, one on each end; three wash compartments; and a small scraping compartment. The first one is a soaking sink. Between the soaking and the wash compartment is a small one, approximately 8 in. wide and 10 in. deep, with a removable perforated tray set on top of it into which food materials are scraped. The third wash compartment is for rinsing. The compartments for the sink should be 14 to 16 in. deep, 20 in. wide, and 28 in. long. Shelves should be provided, mounted on wheels, under the drainboards.

Serving Area. A glass plate in front of each serving counter to protect food from the breaths of those in line is usually required by the health authorities. This glass plate should be placed several inches above the top of the counter so there is space for passing plates of food under the glass.

Electrically heated food tables in stainless metal are more desirable than the gas steam tables. In the electric food tables, steam and moisture are eliminated and the tables do not require plumbing. Each section in the table is thermostatically controlled and the heat in each section can be adjusted to the proper temperature for each type of food. Panel adapters are available which makes it possible to use different sized containers.

A dry hot food storage table may be substituted. For this type, a gas line is required, but no plumbing, water, or drains are needed. The temperature of each compartment can be controlled individually.

Silver containers should be on the service counter near the trays. These containers should be built so that the silver may be stacked, handles up.

Soaps, detergents, etc., should be stored in a compartment under the pot and pan sink area. Sufficient space above and below the dish tables insures proper air drying.

A towel drying rack which can be pulled up close to the ceiling should be included.

The garbage can storage room should be located so that it is accessible from the driveway, convenient to the kitchen, yet can be locked on the kitchen side. The room should be louvred and screened for natural ventilation. It should be located near the receiving area, not the kitchen. The garbage room should have

(*Continued on page 248*)

I.E.S. ISSUES FIRST DAYLIGHTING REPORT

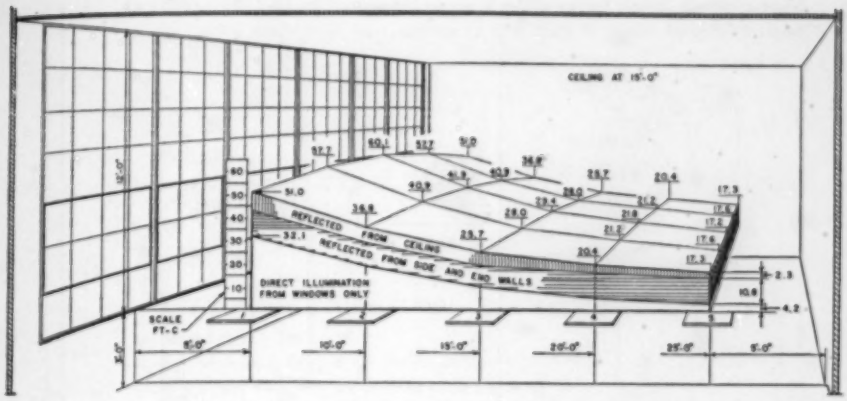


Illustration from first I.E.S. report on daylighting effectively shows the total lighting distribution on a horizontal plane 3 ft above floor

The first *Recommended Practice of Daylighting** just published by the Illuminating Engineering Society presents technical data and recommendations for the effective utilization of daylight in schools, offices, factories and homes. The principles described, however, can be applied to all types of building.

Recommendations form the main text of the report; design information needed for daylighting calculations is covered in several appendices; and a comprehensive bibliography of over 200 references concludes the report. Almost all of the data contained is from previously published material.

At first, the report discusses daylighting design principles, including such topics as sky brightness, daylighting distribution, effect of inside and outside colors, and effect of obstructions. Then follows general information on sunlight control, including building orientation; fixed and variable devices such as shades, louvers and overhangs.

Tables and graphs plus accompanying explanatory text in the appendices permits planning for desired lighting requirements.

The report was compiled by a Sub-Committee of the Committee on Daylighting, assisted by Bernard F. Greene, lighting consultant.

** Available from Illuminating Engineering Society, Publications Office, 51 Madison Ave., New York 10, N. Y. 50 cents.*

HEATING CABLE USED FOR SNOW MELTING

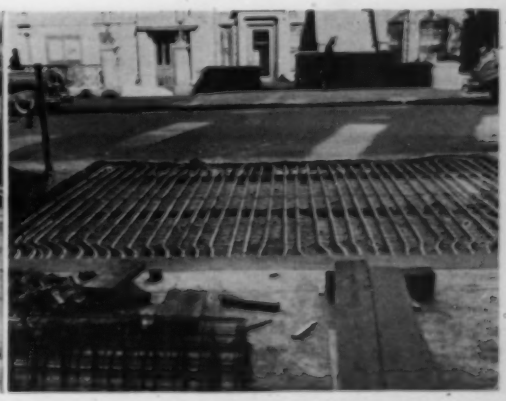
Snow was melted from the sidewalk (portion just beyond second parking meter) shown in the left photo simply by flicking a switch. Electric heating cable placed inside steel conduit supplies heat to this sidewalk which is in front of the Rockland Light and Power Co. building in Nyack, N. Y. Conduit protects the cable and permits replacement if the cable fails. The other photos show how the system was installed in a driveway for a garage in Brooklyn, N. Y.

The lead-sheathed heating cable used comes in 60- and 120-ft lengths for 120 and 240 v, respectively; rating of the 60 ft cable is 420 watts. Maximum sheath temperature is 165 F.

Spacing of the 1-in. galvanized conduit is based on a load of 32 w per sq ft, which is sufficient to melt a snowfall of 1 in. per hr at an air temperature of 26 F. The conduit on these jobs was spaced 6 in. on center and buried about 1½ in. below the concrete surface.

Conduits terminate in a pull box with copper terminal strips for the cables.

According to Mario F. Muzzillo, New York City consulting engineer who designed these installations, initial cost is about $2.00 per sq ft (New York City), and annual operation cost (100 hr) for 1000 sq ft would cost $64 at 2 cents per kwh.



HARDWARE—10; DOOR CLOSING DEVICES

By Seymour Howard, Architect, with the cooperation of American Society of Architectural Hardware Consultants

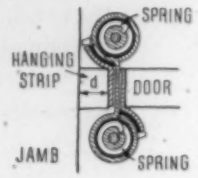
SPRING HINGES

Simplest closing device. Energy stored in spring closes door. No closing speed control unless additional device is used, such as surface type door check without spring.

DOUBLE ACTING SPRING BUTT HINGES

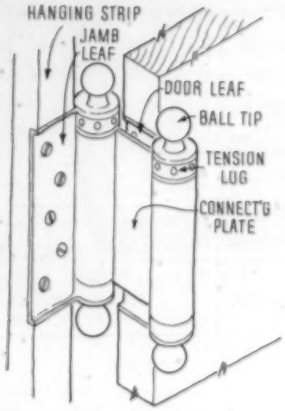
Note: Also available with button tip

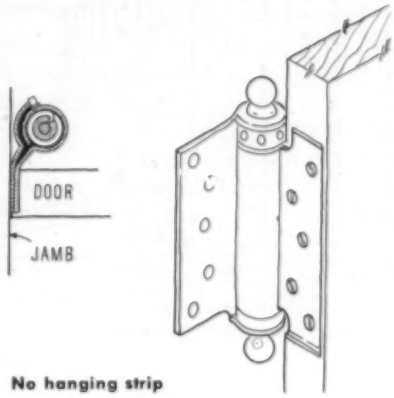
Double Acting



With hanging strip

Also available with clamp flanges and bolts for kalamein doors.

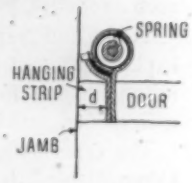




No hanging strip

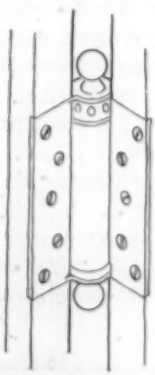
SINGLE ACTING SPRING BUTT HINGES

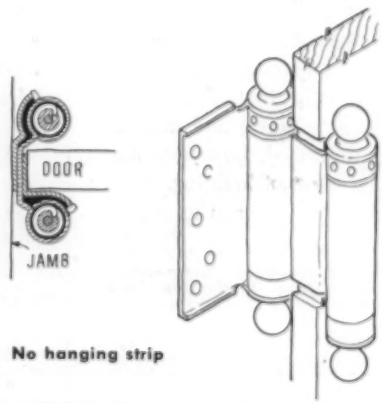
Note: Also available with button tip



With hanging strip

(If jamb face is in line with door face, this type can be used without additional hanging strip)
Also available as half surface hinge for kalamein doors with pressed steel jambs (4, 6, and 7 in. sizes)





No hanging strip

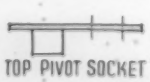
SIZES OF SPRING BUTT HINGES	Size	Min Door Thickness	Max Door Thickness Wood	Max Door Thickness Metal	Max Door Width	Max Door Weight	Depth (d) Hanging Strip (if required)
Note: Check all information and details for exact cases carefully with mfr.'s catalogs.	3″	¾″	1″	⅞″	2′–2″	30 lb.	½″
	4	⅞ (1)	1¼	1⅛	2–4	42	⅝
Variations in door thickness for hinges of different mfrs. shown in parentheses.	5	1⅛ (1)	1½	1⅜	2–6	56	⅝
	6	1¼ (1⅛)	1¾	1½	2–8	72	¾
	7	1¾ (1¼)	2	1¾	2–9	90	⅞
* For hanging strip only.	8	1½	2¼	2	2–10	110	1
	10	1¾	2½	2⅛	3–0	150	1⅛
	12*	2¼	3	2⅝	3–2	190	1¼

General Rules

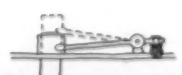
1. Use largest size hinge that thickness of hardwood and kalamein doors will permit
2. Use min door thickness only for light wood doors
3. Use three hinges for doors that are extra heavy or frequently used. Place third hinge down ⅓ distance between upper and lower hinges.

SPRING PIVOT HINGES

Double Acting

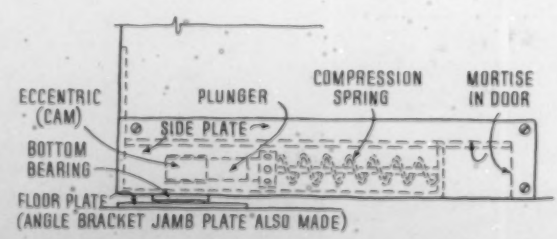


NOTE: TOP PIVOTS MAY BE USED WITH ANY CENTER-PIVOTED DOOR



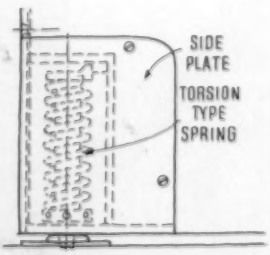
Horizontal Type

For doors 1⅛ to 2¾ in. thick



Vertical Type

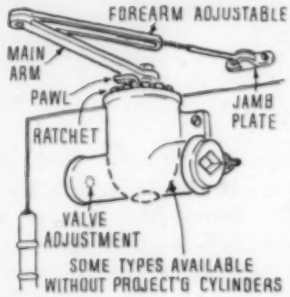
For doors 1⅛ to 2¾ in. thick



HARDWARE—11; DOOR CLOSING DEVICES

By *Seymour Howard, Architect,* with the cooperation of American Society of Architectural Hardware Consultants

DOOR CHECKS (CLOSERS)

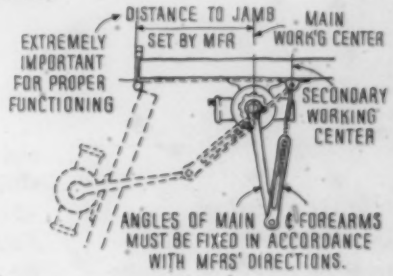


Surface Type

Dimensions approx. Check with mfr. for exact sizes

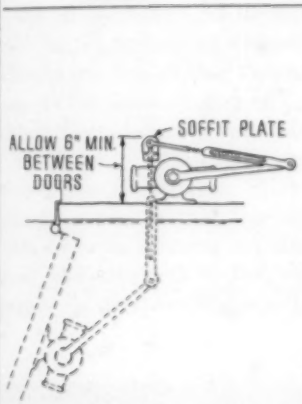
Angle to which door may be opened is set by: closer to jamb distance; length of main arm (may be available in different sizes) and fore arm (adjustable); jamb and butt conditions; projection of closer. When specifying, state max opening angle desired.

OVERHEAD CLOSERS


DISTANCE TO JAMB SET BY MFR
MAIN WORK'G CENTER
EXTREMELY IMPORTANT FOR PROPER FUNCTIONING
SECONDARY WORKING CENTER
ANGLES OF MAIN & FOREARMS MUST BE FIXED IN ACCORDANCE WITH MFRS' DIRECTIONS.

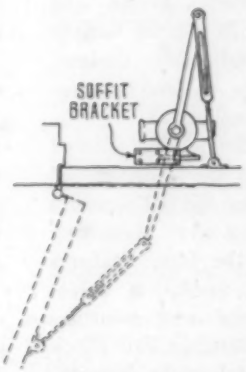
- **Mounted on door, hinge side, with regular (exposed) arm.**

Door weight carried on hinges or pivots



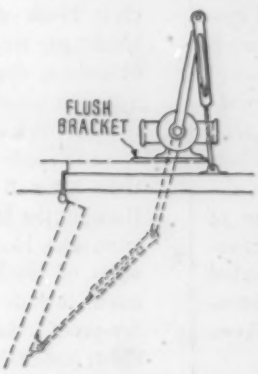
Parallel Arm

Mounted on stop side of door. Used where min clearance is required; e.g. between two doors. Effective power reduced; use next larger size.



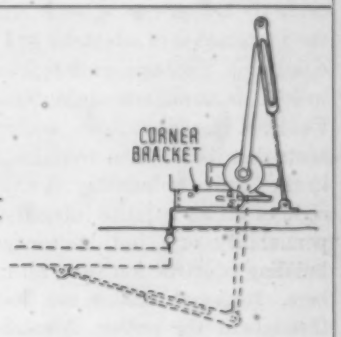
Soffit Bracket

Soffit bracket usual type. Distance from jamb to main working center maintained for full effectiveness.



Flush Bracket

Flush type mounted on face of opposite side when soffit is narrow. Working center distance maintained.



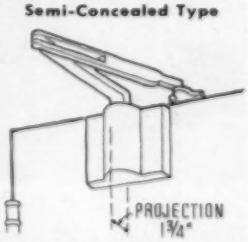
Corner Bracket

Corner bracket used to obtain 180° opening or for less obstruction. Effective power reduced; use next larger size.

Mounted on brackets on stop side to keep closer out of weather, to hide, or when trim interferes.

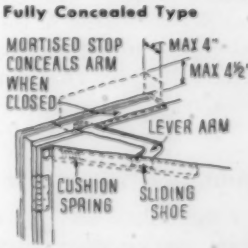
Special Arms Available: Two or three point hold open arms for hospitals (private—about 10° for ventilation; semi-private—about 45°; passage—about 95°); and hold open arms with fusible links for automatic closing in case of fire. Hold open arms cannot always be depended on for exterior doors opening out; use separate holder if necessary.

Semi-Concealed Type

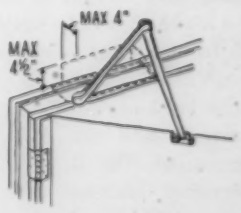


Partly mortised into upper door rail. Usually requires 1¾ in. wood, 1½ in. metal door.

Fully Concealed Type



Housed in head above door. For doors on hinges, offset or center pivots.



Housed in head above door. Projecting arm gives greater power than concealed arm. Door on hinges or pivots. Arm projects on stop side. Also used on outswinging wood doors when door top is not weather protected.

Sizes of Overhead Door Closers *(From Dept. of Commerce CS22–40)*

Where strong drafts are encountered and as noted above under bracket and parallel arm installations, use next larger size.

Size	Description, Max Door Size (Approx.)
I	Ordinary screen, light interior doors 1⅛ in. by 2 ft-6 in. by 6 ft-6 in.
II	Heavy screen doors, 1⅜ in. by 3 ft by 7 ft Light interior doors, 1⅜ in. by 2 ft-8 in. by 7 ft Closet doors, 1¾ in. by 2 ft-8 in. by 7 ft
III	Light exterior doors, 1¾ in. by 2 ft-6 in. by 7 ft Corridor or office doors, 1¾ in. by 3 ft by 7 ft
IV	Ordinary exterior doors, 1¾ in. by 3 ft by 7 ft-6 in. Heavy interior doors, 2¼ in. by 4 ft by 7 ft-6 in.
V	Heavy exterior doors, 2¼ in. by 3 ft-6 in. by 7 ft-6 in. Heavy interior doors subject to strong drafts
VI	Extra heavy entrance doors 3 in. thick or over, or doors of unusual height or width, refrig. doors, etc.

(Continued on page 177)

PRODUCTS for Better Building

For the Betterment of Builders' Hardware

The *American Society of Architectural Hardware Consultants* seeks to work with the architectural and engineering professions toward a sympathetic understanding of mutual problems. Their chief objectives are to promote knowledge of, and interest in the betterment of hardware and the preparation of schedules and specifications. The organization, founded in 1940, is an affiliate of the National Contract Hardware Assn., and represents distributors and technical men in the hardware industry. A uniform code of ethics requires integrity, dependability and full knowledge of building construction from all members. Regional offices are located throughout the nation. Administrative Offices are at 420 Madison Ave., New York 17, N. Y.

Ash Removal Hoist

The *P&H Zip-Lift Electric Hoist*, operating on the boom principle, is recommended by the manufacturers for use in ash removal from basements in large buildings. The 24-ft lift of the jib-mounted hoist is said to be ample to remove loaded ash cans weighing up to 400 lb from an 18-ft deep pit, to a height sufficient for easy loading on trucks. The hoist operates on standard 110-v current, and may be had in capacities up to 2000 lb for this and other services. Harnischfeger Corp., Hoist Div., 4400 W. National Ave., Milwaukee 14, Wisc.

Storm Sash and Screen Unit

The *Eagle-Picher Triple Slide* storm window combines two glass panes and a screen which move up and down independently of one another, each along an individual channel. The unit was designed to allow quick and easy changes to be made to suit any kind of weather. Frames are all aluminum or aluminum and stainless steel. An aluminum sealer strip closes the space between the storm window and the primary window frame. Each of the sash inserts is removable for washing from the inside of the house. A safety lock is provided on the bottom of the screen unit. Eagle-Picher Co., Cincinnati 1, Ohio.

Brick-Faced Concrete Block

Bric-Block combines standard concrete block with a brick facing. The blocks are available in a great variety of colors, shades and ashlar designs, and the usual types of face textures used in brick construction.

Tests made with the material showed that after 8 cycles of freezing and thawing the brick face did not separate from the blocks, nor were there any signs of cracks in the face. Features cited include good insulation value; fire-proof, damp-proof and weather-tight; and little maintenance. Bric-Block of Newark, Inc., 430 Adams St., Newark, N. J.

Asbestos-Cement Shingles

Stri-Tex, a new asbestos-cement siding shingle, is designed for exterior application on either new or old side walls. The finish is said to have a striated texture, with colorful mineral granules embedded in the surface. The material is currently available in brown, green and gray. The Flintkote Co., 30 Rockefeller Plaza, New York 20, N. Y.

Industrial Floor Tile

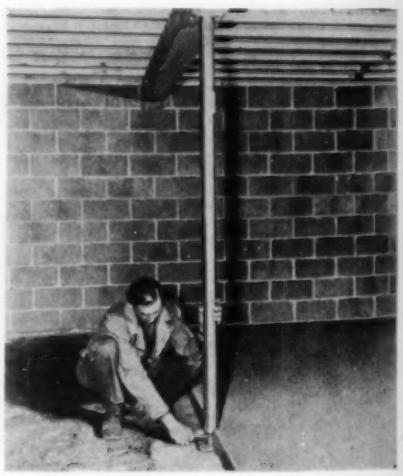
Enduro floor tile, the manufacturers claim, can be subjected to the hardest kind of usage and installed on practically any type of underflooring. It can also be laid on or below grade, provided normal precautions are taken and water pressure is not present. The tile is said to have the abrasion resistance of inlaid linoleum, not to become hard or brittle or to shatter under impact, and to be highly slip resisting.

Enduro tile has an asphaltic base and is made ¼-in. gage in dark brown, black and dark green. It is available in 12-, 18- and 36-in. squares, and in 18- by 24-in. and 24- by 48-in. sizes. Sloane-Blabon Corp., 295 Fifth Ave., New York 16, N. Y.

Adjustable Steel Columns

The *Tapco Mono-Post* is designed to serve first as an adjustable support column during the early stages of residential and light industrial construction, then to be embedded in the concrete floor as a permanent fixture. Temporary support installations are eliminated.

The post is made of 11 gage, 3 in. OD plastic-coated steel tubing. The 7-ft post weighs about 40 lb. The assembly includes welded plates at the top and bottom and a precision-built jack for periodic adjustments. In use, the jack is first attached to a footer. After adjustments on all supports have been completed, the base plate, jack, and about 1 in. of the post are embedded in the concrete floor. The finish is said to be silvery in appearance, durable under all atmospheric conditions, and resistant to acid, alkali and corrosive influence in general. Akron Products Co., Seville, Ohio.



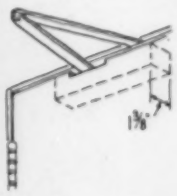
Plastic-coated steel post serves both as temporary and permanent support column

(*Continued on page 252*)

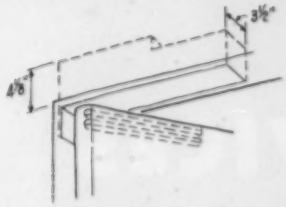
HARDWARE—12: DOOR CLOSING DEVICES

By Seymore Howard, Architect, with the cooperation of American Society of Architectural Hardware Consultants

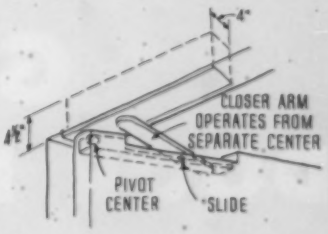
Fully Concealed Overhead Door Closers (Continued)



Housed in door. For interior doors only. Also available with concealed arm. Door hung on hinges or pivots.

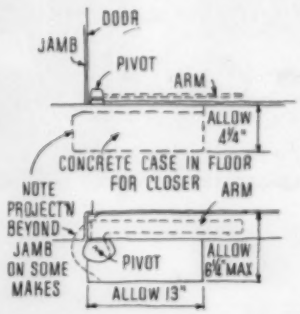


For double acting interior doors, hung on center pivots. Housed in head above door.



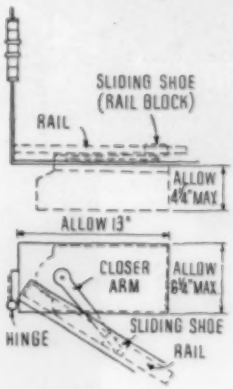
For heavy and exterior double acting doors, hung on center pivots. Housed in head above door.

FLOOR CLOSERS (CHECKING FLOOR HINGES, FLOOR CHECKS)

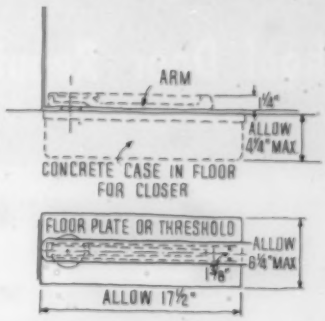


Single Acting On Offset Pivots

Weight carried on closer spindle. Also available with separate closer arm operating from centerline of door.



Single Acting on Butt Hinges



Double Acting On Center Pivots

Similar type available for single acting on center pivots (Mechanism is simpler. Only 13 in. length of case needed).

The above type closer is also available with closer arm operating from separate center (weight of door not carried on closer spindle).

See mfr.'s catalogs for sizes required for specific doors and for exact dimensions

PRINCIPLES OF CLOSER MECHANISMS

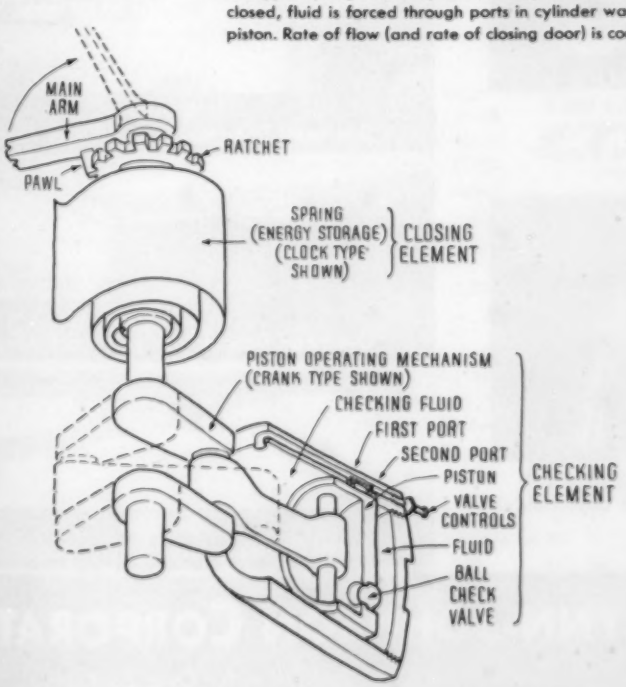
Designs vary with mfr. and position of closer. Basic operating principle is common to all:

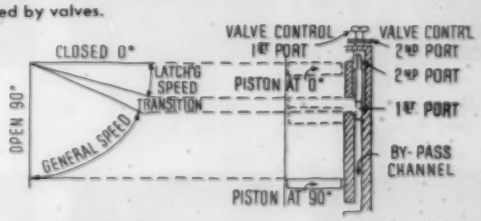
Opening Door:

Energy is stored in spring; shaft, through connecting mechanism, moves a piston, displacing checking fluid through a ball check valve.

Closing Door:

Energy in spring rotates spindle, closing door; at same time piston is moved back. With ball check closed, fluid is forced through ports in cylinder wall into by-pass channel leading to other side of piston. Rate of flow (and rate of closing door) is controlled by valves.





Latching speed may be:

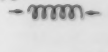
1. Same as general speed
2. Greater than general speed to overcome latch-point resistance (strong draft or latch spring)
3. Less than general speed for silent closing.

Spring May be:

1. Spiral wound, flat band (clock type)
2. Helical wound, circular, oval or flat wire.

A. Torison type

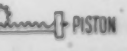
B. Compression type



Piston Operating Mechanism May Be:

1. Crank type (as shown)
2. Cam type (usual in floor closers)
3. Semi Rack and pinion
4. Full rack and pinion
5. Rotary position
6. Diamond block.

3.

4. 

5.

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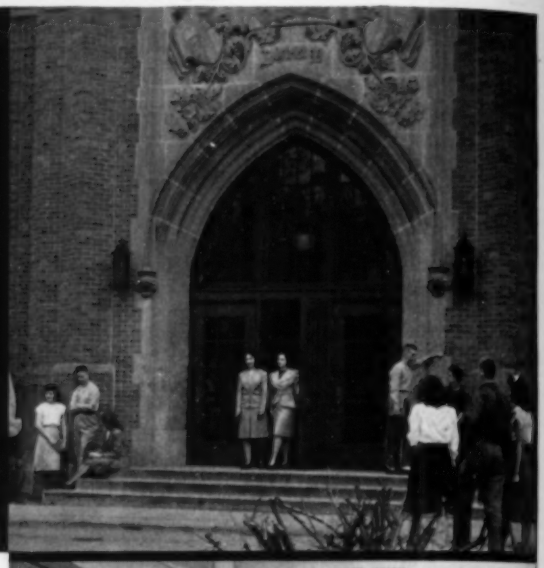
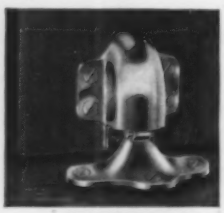


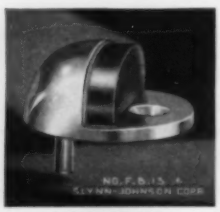
- √ Entrance
- √ Vestibule
- √ Classroom
- √ Stairwell
- √ Gymnasium
- √ Closet
- √ Office
- √ Transoms

G-J 400
Concealed Transom Adjuster

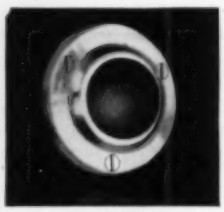
G-J 21A
4-Way Catch



G-J F-40
Door Holder
and Bumper



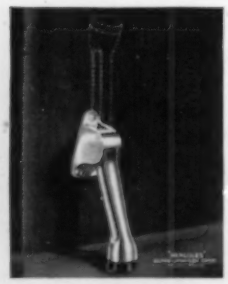
G-J FB-13
Dome Type
Door Bumper



G-J WB-5
Wall Type
Flush Bumper

G-J F-20
Door Holder
and Bumper

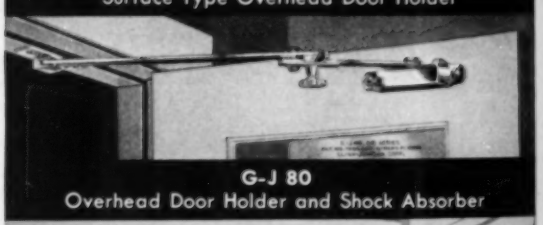
G-J F-9
Door Holder
and Bumper



G-J No. 4
Hercules Door Holder

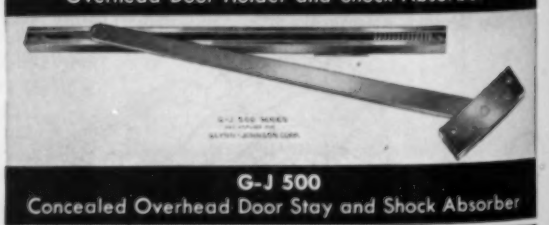
G-J 100
Concealed Overhead Door Holder

G-J 90
Surface Type Overhead Door Holder



G-J 80
Overhead Door Holder and Shock Absorber

G-J 70
Overhead Door Holder and Shock Absorber



G-J 500
Concealed Overhead Door Stay and Shock Absorber

For detailed description and applications of these devices, refer to our general catalog.

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HEATING SYSTEMS FOR HOUSES

Convector Baseboard Heating Systems: 4—Design Of System

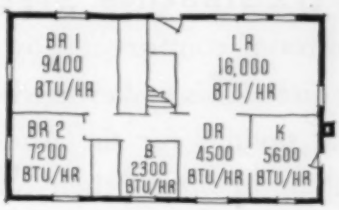
By William J. McGuinness
Professor of Architectural Engineering
Pratt Institute

This is the second of two parts on convector baseboard heating, and presents a simplified design procedure for a typical small house installation. Part I, covering basic data and layouts of the system, appeared in the March 1950 Time-Saver Standards.

Room heat loss is computed in the same manner as for other conventional heating systems. The system is very economical of pipe since most of it is in the heated space. Credit can be taken for the heat emission of bare pipe behind base. This and the finned areas of convectors make up heat loss in each room. Length of the convector will depend on its rating. Many designers feel that the lower output convectors are desirable because they come closer to filling up the length of the entire exterior wall, thus distributing heat better. A similar argument is offered for use of lower water temperatures. Convectors which discharge at the front cause less wall streaking but are slightly less efficient. Selection of pump and pipe sizes follows closely the usual procedure in designing radiator-type forced hot water systems. High points must be vented and low points drained. Convectors and loops are run level. It is advantageous for incidental piping to pitch to drains. Lengths obtainable vary with manufacturers, but usually units come in multiples of 6 in. The base which covers the unit can often be cut to exact size on the job. Controls are not possible within a circuit except by dampers in some models. The several circuits in a large system can be balanced with valves or zoned by the use of separate pumps.

DESIGN OF A SERIES LOOP, FORCED HOT WATER SYSTEM USING BASEBOARD CONVECTORS

Step 1. Compute hourly heat loss. This computation is the usual one and is not affected by use of baseboard convectors:



	Btu/hr heat loss
Living Room	16,000
Bedroom 1	9,400
Bedroom 2	7,200
Bath	2,300
Dining	4,500
Kitchen	5,600
Total	45,000 Btu/hr

Step 2. Establish average water temperature and temperature drop in system:

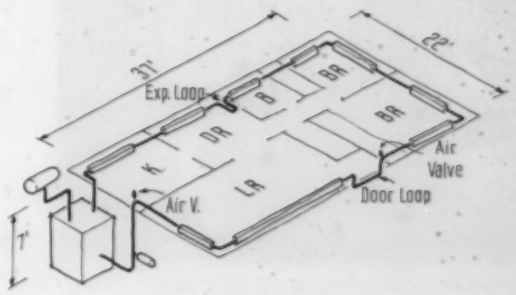
Average temperature	180 deg
Temperature drop	20 deg

Step 3. Compute gallons per minute (GPM) to be circulated at 20 deg drop to make up heat loss:

$$\frac{45{,}000 \text{ Btu/hr}}{9{,}600 \text{ (Factor)}} = 4.7 \text{ GPM}$$

For an explanation of step 3 and of factor 9,600 see Time Saver Standards, 2-Pipe Forced Hot Water Systems, Nov. 1949.

Step 4. Make layout and dimensioned pipe drawing to establish measured length and equivalent total length:



Actual Circuit Length:

Length	37
	37
Width	22
	22
Height	7
	7
	132 ft

Total equivalent length to include resistance of fittings, boiler, etc:
132 x 1.50 (add 50 per cent) = 197 ft
Say 200 ft.

(Continued on page 181)

NORRIS, TENNESSEE, HIGH SCHOOL

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Boiler room of the Norris (Tenn.) High School, showing stoker-firing.
Architects: Barber and McMurray, Knoxville, Tenn.
Heating Contractor: John F. Lonas, Knoxville, Tenn.

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HEATING SYSTEMS FOR HOUSES

Convector Baseboard Heating Systems: 5—Design Of System Continued

By William J. McGuinness
Professor of Architectural Engineering
Pratt Institute

(Continued from page 179)

DESIGN OF A SERIES LOOP, FORCED HOT WATER SYSTEM USING BASEBOARD CONVECTORS

Step 5. Select pump and establish "head" against which it must pump:

See Time Saver Standards, Nov. 1949, Booster Capacity, Chart 1.

A 1-in. pump will deliver 4.7 GPM against 5.5 ft of head.

Step 6. Select size of main:

Consult Time Saver Standards, Forced Hot Water Systems, Sept. 1949, Table 1 Sec. A, which also applies to this type of circuit. With an equivalent length of 200 ft and a head of 5½ ft, the pressure drop per ft will be 350 millinches.

Section "B" of this table shows that a 1-in. pipe will supply 59,000 Btu/hr at a 20 deg drop. This is adequate and a *1-in. main* will be selected. The capacity is found in the 350-millinch column.

Step 7. Select type of baseboard and by its output, compute the length required in each room:

For example, use Dumham "BOTS"; output at 180 F is 636 Btu/ft.

$$\frac{\text{Room heat loss}}{\text{Output/ft}} = \text{Length}$$

An "adjustment" (see below) is often used to increase the second and third divisions of the circuit 7½ and 15 per cent respectively. For this purpose, the circuit is divided roughly into 3 parts. The increase offsets the lower temperatures at end of line.

Step 8. Select expansion tank:

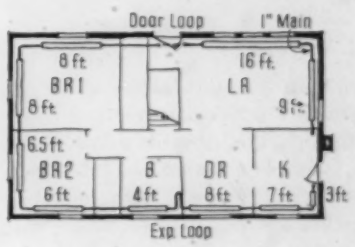
Btu Load	*Tank Size*
80,000/hr	8 Gals
150,000	15
180,000	18

An 8-gal tank is used.

Step 9. Select boiler:

Total heat loss of 45,000 Btu/hr and type of firing will be used in selecting boiler. Manufacturers make allowance for pipe-loss, pick-up and normal domestic hot water demand.

Step 10. Lay out system:



Space	Heat Loss	Length "BOTS"	Adjustment	Revised length to be used
L. R.	16,000	25.0 ft	None	25.0 ft
B. R. 1	9,400	15.0	x 1.075	16.0
B. R. 2	7,200	11.5	x 1.075	12.5
Bath	2,300	3.6	x 1.150	4.0
D. R.	4,500	7.1	x 1.150	8.0
K.	5,600	8.8	x 1.150	10.0

Notes: Heat emission of bare pipe has been neglected in this design, so system is slightly overdesigned.

Non-ferrous convectors can be used in series with fin-type baseboard elements. The size of these convectors is determined by their output rating at the average water temperature of the system.

180 deg average temperature is desirable for comfort and cleanliness. Higher temperature would make possible shorter units with resulting economy of installation.

MANUFACTURERS' LITERATURE

Air Diffusers

Experience Plus Energy — Agilair. Folder pictures and describes a line of square, rectangular and circular air diffusers for ceiling or side wall mounting. Line drawings give model numbers, patterns, and typical application of various types available. Air filters, grease filters and exhausters are also covered. 6 pp., illus. Air Devices, Inc., 17 E. 42nd St., New York 17, N. Y.

Ceramic Tile

The Color Book of Tile. The first section of this booklet consists of 30 color plates illustrating tile effects in bathrooms, powder rooms and kitchens. Each plate is accompanied by details of decorative strips, inserts, accessories, and alternate floor patterns. Specifications and descriptions of the tiles are listed on the reverse side.

The second section consists of eight 4-page folders giving color charts and sketches of the entire line of tiles. Copies are available to established architectural offices. 100 pp., illus. American-Olean Tile Co., 900 Kenilworth Ave., Lansdale, Penn.*

Acoustical Materials

How to Select an Acoustical Material. Booklet discusses acoustical correction and noise-reduction, and presents a line of materials, with description, sound-absorption coefficients and photographs of each. Sketches and details give data on installation by cementing, nailing, or mechanical suspension. 16 pp., illus. Armstrong Cork Co., Building Materials Div., Lancaster, Penn.*

Evaporative Cooler

Comfort Air Washer Answers the Need for Economical Summer Cooling. Folder describes and gives features of the Comfort Air Washer. Diagrams and photographs explain operation. Specification tables and drawings are given for four sizes of the unit. 6 pp., illus. Comfort Products Corp., 2220 Lamesa, Dallas 2, Tex.

Aluminum Siding

Kaiser Aluminum Siding Technical Information and Engineering Details. Booklet includes architectural drawings of various eave and window details, methods of application at exterior and interior corners, and foundation and frieze board details. Description of the siding is also given, with specifications, heat transmission coefficients, accessories, and general construction information. Renderings illustrate applications of the siding in various types of construction. 16 pp., illus. Kaiser Aluminum & Chemical Sales, Inc., 1924 Broadway, Oakland 12, Calif.

Steel Boiler

Kewanee Square-Heat Type R (Catalog 88-8). Presents features and operation notes on the boiler unit. Photographs, cut-away renderings and dimensioned drawings are included for various internal and external parts. Several tables give data for hand-fired coal, oil, gas or stoker operation. 8 pp., illus. Kewanee Boiler Corp., Kewanee, Ill.*

Radiant Heating Coils

(1) Kritzer Fin-Tube Radiant Coils for Radiant Panel Heating; (2) Kritzer Radiant Baseboard Heating. The first of these pamphlets shows step by step method of installing the heating coils in enclosed joist and stud spaces in ceilings, floors or walls. A schematic drawing shows a typical arrangement of heat circulation in a small house.

The second pamphlet gives data and construction details on a baseboard heating unit. Installation notes and drawings are also given. 4 pp., 6 pp., illus., Kritzer Radiant Coils, Inc., 2901 Lawrence Ave., Chicago 25, Ill.

Metal Louvers and Jalousies

Lemlar for Leadership in Daylight Engineering. Booklet describes line of metal Venetian awnings, vertical and horizontal louvers and jalousies for interior and exterior use. Models are shown with both fixed and movable vanes. Detailed drawings are included for each type, together with construction notes. Many photographs and drawings show typical installations. 18 pp., illus. Lemlar Manufacturing Co., P. O. Box 352, Gardena, Calif.

Storage Units

BSC, the Herman Miller System of Basic Storage Components. Brochure contains specifications, drawings, sizes, finish and related data on cabinet units for use in built-in storage walls and compartments. The units include drawers, shelves, panel doors, drop leaves, and radio and phonograph compartments in varying sizes. Several photographs show typical installations in carpenter-built frames. 16 pp., illus. The Herman Miller Furniture Co., Zeeland, Mich.

Nailing Channels

The Nailock Method for all Suspended Ceiling Construction and for Furring for all Types of Nailable Materials (Catalog N-2). Describes the nailing channels, lock clips and strips, and special nails. Basic methods of use and installation data are covered with drawings, notes and photographs. Specifications and a listing of distributors are also included. 8 pp., illus. The Sanymetal Products Co., Inc., 1701 Urbana Rd., Cleveland 12, Ohio.*

Sliding Door Hardware

Sterling Hardware for Sliding Doors (Catalog No. 11). Covers a line of hangers, tracks and hardware for sliding doors. Features and installation notes are listed for each, along with detailed plan and section drawings, and tables of sizes. Data is included for both by-passing and pocket doors. 8 pp., illus. Sterling Hardware Manufacturing Co., 2345 Nelson St., Chicago 18, Ill.

Appliance Venting

Venting Domestic Gas Appliances Four articles by Carl H. Dean, reprinted from the American Gas Journal, on the creation of venting standards for gas heaters and appliances. The series, by analyzing the problems presented and discussing research findings on the

(*Continued on page 280*)

** Other product information in Sweets's File, 1950*

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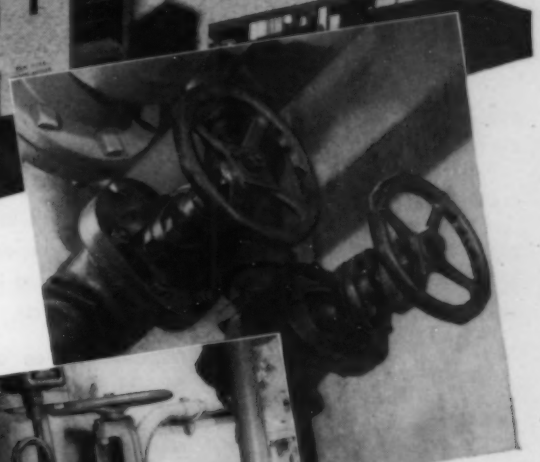

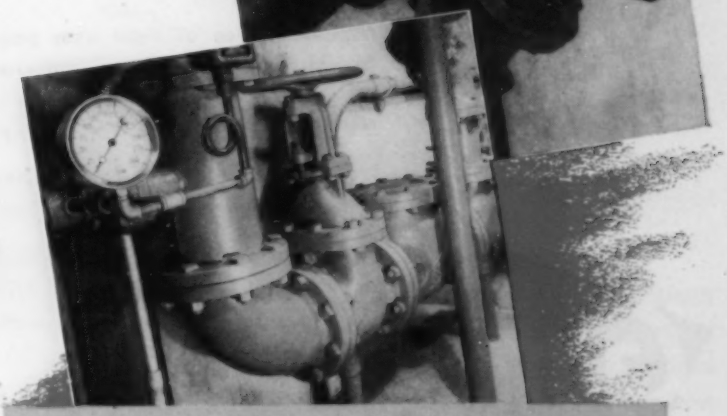

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THE RECORD REPORTS

(*Continued from page 24*)

lowed to interfere. A visitor from a foreign architectural school who came to see the department at Yale recently expressed the opinion that our emphasis on free individual development in design is superior to the European emphasis on technical training. It would seem that some just mean between the two could be found, and that is what we must look for."

Architecture Department at Illinois Gets Merit Award

Award to the Department of Architecture of the University of Illinois of the 30th medal award for scholastic merit of the American Group, The Société des Architectes Diplomes, P.L.G.F., has been announced.

The award, which was presented at the midwinter Commencement exercises of the university, is made "for exceptional excellence of the work of its faculty and students during the scholastic year 1948–1949."

The medal is given annually as a stimulus to the architectural schools of the country.

Previous awards have gone to Carnegie Institute of Technology, Catholic University, Columbia University, Georgia Institute of Technology, Harvard, Yale, Massachusetts Institute of Technology, Princeton and the University of Pennsylvania. The University of Illinois had won it four times previously.

Welding Engineering Session Is Planned at Ohio State

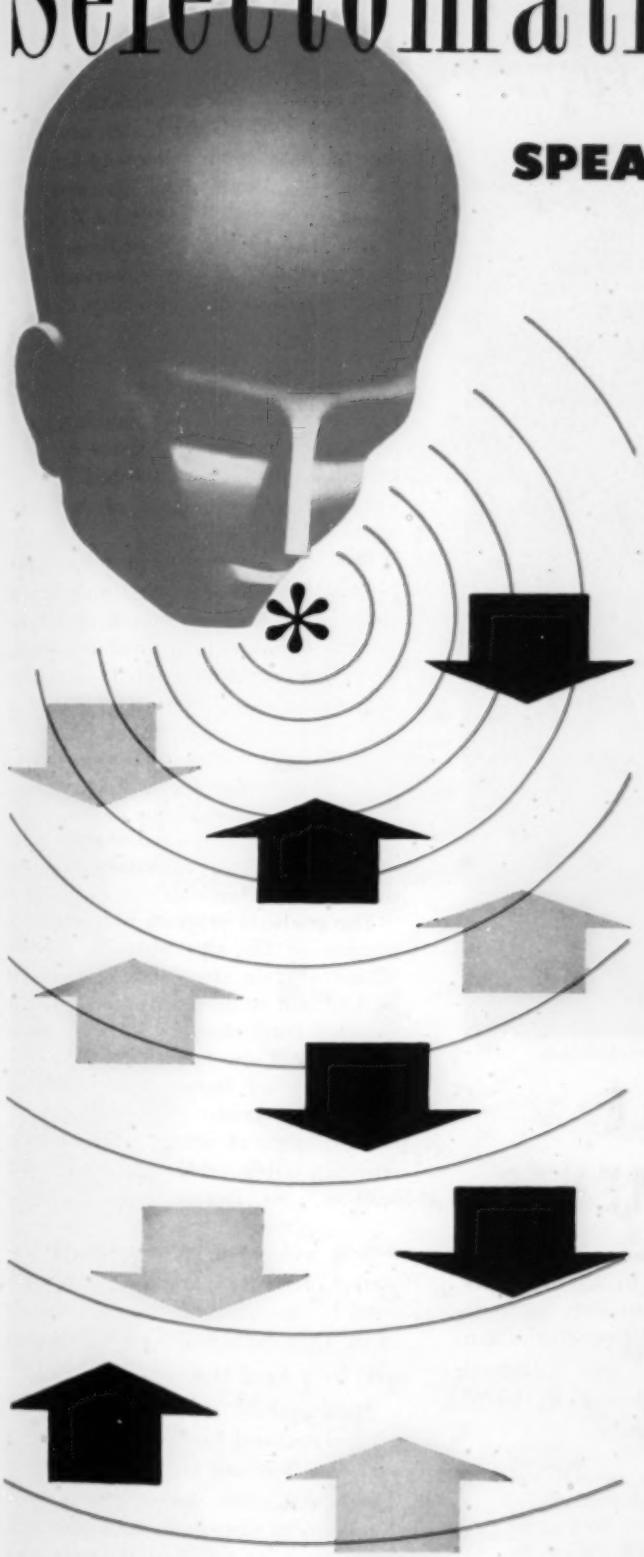
Some 300 engineers, designers and production supervisors from Ohio and neighboring states are expected to attend the 11th meeting of the Ohio State Welding Engineering Conference at the university April 14 and 15.

"Economy in Design and Production" is the theme of this year's conference, which will deal with design in the first day's session and with production methods in the second.

Speakers will include W. R. Plummer, Progressive Welder Co., Detroit; William J. Phillips, director, Product Development Dept., Steel Founders' Society, Cleveland; A. T. Waidelich, vice president and manager, Research Division, The Austin Co., Cleveland; Dr. Finn Jonassen, technical director, Committee on Ship Steel, National Research Council; E. C. Brekelbaum, chief

(*Continued on page 186*)

Selectomatic Elevators



SPEAK WHEN SPOKEN TO...

Selectomatic has a pleasing reply for every request for service. That reply is a car going in the desired direction within a minimum of waiting time.

Take a typical office building during the "off peak" period. Tenants voices change from loud demands for down and gentle whispers for up... to a clamor for up and a polite inquiry for down... to a steady babble for equal service in both directions. Selectomatic has an instant and automatic answer for each request.

That's because Selectomatic is never confused by the number or type of calls. Its unique electrical brain calmly separates the "ups" from the "downs" and regulates the entire elevator bank to give the most efficient service possible—and it does it all instantly and automatically.

Unlike other systems, Selectomatic doesn't depend on a starter's hunch for when to send which cars where. With Westinghouse Selectomatic automatically matching service to demand, the starter can concentrate on his most important job... directing traffic.

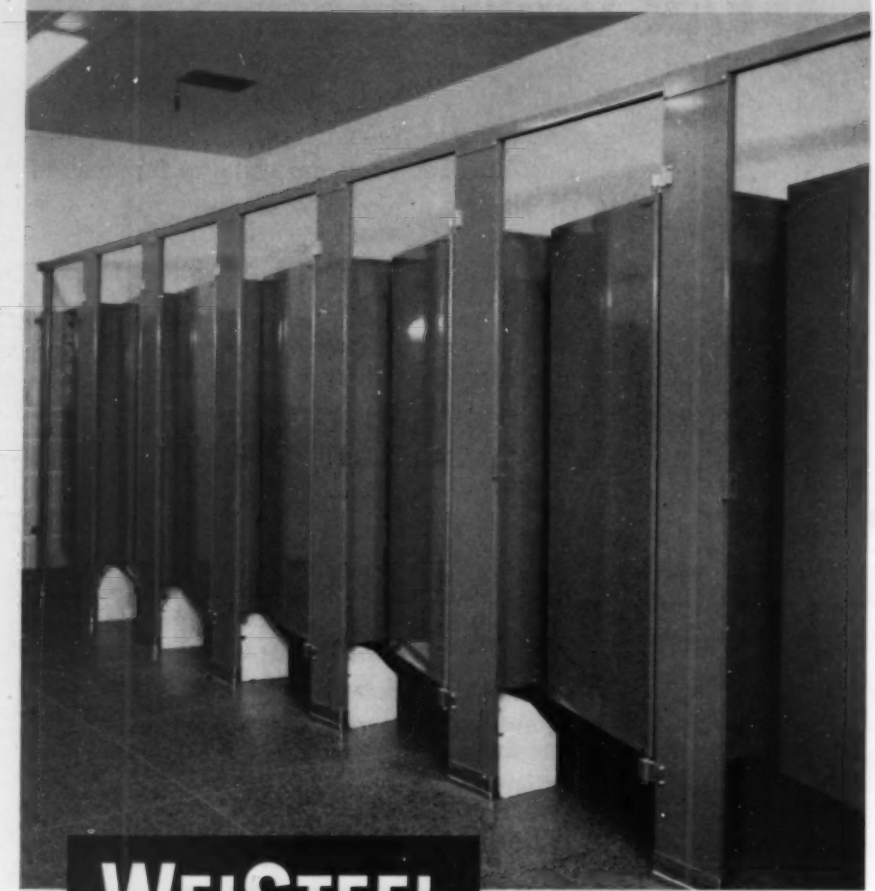
***Selectomatic, an exclusive Westinghouse development, completely supersedes the previous accepted elevator standard . . . signal control.**

See and hear the complete story of Westinghouse Selectomatic. Write on your letterhead and we'll gladly arrange a showing, at no cost, of our sound motion picture "Speeding Vertical Transportation With Selectomatic Elevators." Elevator Division, Dept. D-1, Westinghouse Electric Corporation, Jersey City, New Jersey.

YOU CAN BE SURE...IF IT'S **Westinghouse**

J-98572

In Macy's Newest and Finest Store...



, Kivett and Myers, Architects

WEISTEEL HI-STILE FLUSH COMPARTMENTS

Latest design and building techniques, and newest materials, incorporated in the new Macy store in Kansas City, Missouri, have made this "probably the finest down-town store in all the U.S.," in the opinion of some specialists. It is highly significant, therefore, that WeiSteel Hi-Stile Flush Compartments were chosen for all the toilet rooms! These compartments combine the fine appearance of smooth modern design with material and structural quality *which has proved its worth through 40 years of service.*

Note the smooth lines of the flush doors, stiles and partitions, sanitary, and insulated against metallic sounds characteristic of many metal products... Edges of partitions, doors and wide stiles are bound and interlocked under tension with drawn molding which is welded at corners. Each edge is reinforced by three thicknesses of metal.

Permanent uniform rigidity and strength throughout all units. Flush dividing partitions are tension-locked directly to stiles... All steel parts are of prime furniture steel or Bonderized galvanized extra smooth steel as specified—finished in high baked synthetic enamel in any of 24 standard WeiSteel colors as selected.

WRITE NOW for new bulletin with details and specifications on WeiSteel Compartments for toilet, shower, dressing and similar enclosures.

HENRY WEIS MANUFACTURING CO., INC., 403 Weisway Bldg., Elkhart, Indiana

THE RECORD REPORTS

(*Continued from page 184*)

engineer, Harnischfeger Corp., Milwaukee; Arthur B. Tesmen, development engineer, North American Phillips Co., New York; G. C. Kiefer, associate director of research, Allegheny Ludlum Steel Corp., Brackenridge, Pa.; and Lew Gilbert, editor of *Industry and Welding.*

Reservations for the conference can be made through the Department of Welding, Ohio State University, Columbus 10, Ohio.

Special Courses

• A new program in city planning, leading to the degree of Master of City Planning, has been established in Yale University's Department of Architecture.

The new program will begin next September and will require two years of study on the graduate level. It will be open to a limited number of architects, landscape architects, civil engineers and others who already hold a professional degree in a related field.

Christopher Tunnard, associate professor of city planning, will be director of planning studies in the program. He has headed the section on city planning in the Department of Architecture for the past five years.

The graduate program will be an expansion of the city planning courses offered at Yale since 1937. "While the student will be occupied largely with a required curriculum in physical planning, he will also be encouraged to develop a broad frame of reference by taking appropriate courses in the related subjects of urban sociology, government, public health and other social sciences," Mr. Tunnard says.

• Next session of the daytime Hardware Consultants Training Course offered by the Midtown Business Center of the City College of New York will be held from April 11 to May 12.

Sponsored by the American Society of Architectural Hardware Consultants and the National Contract Hardware Association, this course concentrates 150 hours of class work in sessions held from 9 a.m. to 4 p.m. each day during the five-week period.

Applications for admission to the course should be addressed to the Supervisor of Admissions, City College Midtown Business Center, 430 W. 50th St., New York 19, N. Y.

(*Continued on page 188*)

Duran

MAIN DINING ROOM

STORAG

Somerset Country Club, Somerset, Pa.
Walker and Mong, Architects

ITCHEN

LOBBY

MEN'S LOUNGE

LADIES' LOUNGE

Specify Masland Duran for all public seating; for wall panelling. Smooth pliancy and durability combine for luxury with the color you choose,— 214 decorator color effects . . . Accidental spills and dirt wipe off with soap and water.

P.S. See Duran in Sealtuft Patterns!

Upholstered with masland Duran all plastic

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COFFEE SHOP

Designed for

RELIABILITY
PERFORMANCE
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H & H { **FLUSH TUMBLER SWITCH**
"T" RATED—10 & 20 AMPERES FOR ALL STANDARD CONNECTIONS

These new back- or top-wired flush tumbler switches give you plenty of performance, profit and reliability. They install quickly and positively. There's no need to bend or loop wire — it goes straight into the unit from the back and is held firmly and permanently by a wire clamp. They're safer, too — there are no exposed wire ends. And they're ideal for use with heavier (10 to 14) wire. Top-wiring with conventional binding screws is optional.

FEATURES? HERE ARE A FEW

Double switch blades protected by 2 Bakelite barriers to snuff arcing • Self-aligning double switch blades give positive connection with solid, one-piece stationary contacts • Plenty of wiring room in the box • Switch mechanism is totally enclosed • One-piece base plate, with washer type plaster ears, is firmly locked into switch cover.

10 and 20 Ampere sizes are available with Brown or Ivorylite handles or as lock-type units; for 1- and 2-pole, 3- and 4-way, and single pole, quadruple break connections.

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WIRING DEVICES
ENCLOSED SWITCHES

THE ARROW-HART & HEGEMAN ELECTRIC COMPANY
HARTFORD, CONNECTICUT

THE RECORD REPORTS

(*Continued from page 186*)

• The landscape architecture curriculum of the School of Architecture and Allied Arts at the University of Oregon has received full accrediting from the American Society of Landscape Architects. Options in the curriculum lead to degrees in landscape architecture and urban planning.

Fellowships

• Applications will be accepted until May 15 for the Kate Neal Kinley Memorial Fellowship for 1950–1951, which offers $1000 to be used for advanced study of the fine arts in this country or abroad.

The Fellowship is open to graduates in music, art or architecture of the College of Fine and Applied Arts of the University of Illinois and of similar institutions of equal standing.

While applicants generally should be not more than 24 years old on June 1, the committee reserves the right to deviate slightly from this provision in the case of very promising candidates, and veterans may deduct amount of time spent in service.

The Fellowship will be awarded on the basis of unusual promise in the fine arts as attested by: high attainment in the applicant's major field of study as shown by academic marks; high attainment in related cultural fields as shown by academic marks; excellence of personality, seriousness of purpose and good moral character.

Candidates proposing to do creative work must file with the committee examples of their work to substantiate their claims of unusual promise; and candidates proposing historical studies must satisfy the committee of their fitness to pursue such studies, either by submitting work already accomplished in the field or by filing a statement by the applicant outlining preparation, accomplishment and proposed work.

Applications may be obtained by addressing Dean Rexford Newcomb, College of Fine and Applied Arts, Room 110, Architecture Building, University of Illinois.

• The College of Architecture and Design of the University of Michigan has announced that applications for the George G. Booth Traveling Fellowship in Architecture will be received until May 15.

(*Continued on page 190*)

REPORT CARD

HORACE MANN SCHOOL

REPORT ON:

J&L JUNIOR BEAMS

J&L STEEL

Left—Workman easily guides notched Junior Beam into place during construction of Horace Mann School.

Below—Completed school showing clean functional design and unique cantilever construction.

Remarks: J&L STEEL JUNIOR BEAMS solve unique design problem *AT LOW COST*

At the Horace Mann School in Warren, Ohio, J&L Junior Beams have again demonstrated that they can do a better job in unusual applications, as well as in ordinary styles of buildings.

Notched over lintel beams and cantilevered three feet beyond the outside walls, J&L Junior Beams support not only the roof but also an attractive permanent sun shield over classroom window walls.

Because of their versatility and adaptability, J&L Junior Beams go far towards meeting the demands of today's builders. They cost less to buy and less to erect. At Horace Mann, Warren Engineering Company, who erected the school, assisted by J. A. McMahon, Ltd., Niles, Ohio steel fabricators, has found that lightweight, 12" Junior Beams, *30 ft. long*, may be easily raised, placed and bolted directly into place by three men with the aid of only a hand-operated winch.

This means *dollars saved*—through speed of erection, elimination of secondary operations, and ease of handling. Yet in light structures, J&L Junior Beams often offer all the advantages of heavier structural members.

Junior Beams, made *exclusively* by J&L, are the lightest weight hot-rolled steel beams available.

In schools, office buildings, apartments, residences, industrial buildings, hospitals, and other light occupancy structures, J&L Steel Junior Beams offer the *modern* builder many advantages. They are economical . . . fire-safe . . . rigid . . . shrink-proof . . . termite proof . . . easy to install . . . low in maintenance . . . and are permanent.

ARCHITECTS • BUILDERS • CONTRACTORS

It will be worth your while to follow the lead of Arthur F. Sidells, architect for the Horace Mann School, Warren S. Holmes, consulting architect, and William C. Fisher, structural engineer on the job. Send for descriptive literature and engineering data on J&L Steel Junior Beams and J&L Junior Beam floors.

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466 Jones & Laughlin Building
Pittsburgh 30, Pa.

Please send me a free copy of your new booklet on J & L Junior Beams, "Skyscraper Construction for Every Building".

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PRINCIPAL PRODUCTS: HOT ROLLED AND COLD FINISHED BARS AND SHAPES • STRUCTURAL SHAPES • HOT AND COLD ROLLED STRIP AND SHEETS • TUBULAR, WIRE AND TIN MILL PRODUCTS • "PRECISIONBILT" WIRE ROPE • COAL CHEMICALS

(*Continued from page 188*)

No formal design competition will be held. Application forms will be issued on request to all graduates of Michigan's College of Architecture and Design who will be less than 30 years of age on May 15.

Inquiries about the Fellowship and requests for application forms should be addressed to: College of Architecture and Design, 207 Architecture Building, Ann Arbor, Mich.

OFFICE NOTES

Offices Opened, Reopened

• M. Davis Alexander announces the opening of an office at 4500-A Montrose Blvd., Houston 6, Tex., offering complete architectural specification service to architects.

• Hugo R. Broleman Jr., Architect, announces the opening of an office for the practice of architecture at 101 West Pine St., Orlando, Fla.

• Jacques E. Guiton has opened an office for the practice of architecture at 155 E. 40th St., New York 16, N. Y. A former partner in the Paris firm of Bazin, Guiton and Canteloup, Architects, Mr. Guiton was employed last year by Leonard Schultze & Assocs., New York City.

• H. Reid Hearn Jr., A.I.A., former chief architect for the Federal Housing Administration, State of South Carolina, announces the opening of his office for the practice of architecture at 1306 Main St., Columbia, S. C.

• Andrew E. Kuby Jr., Architect and Designer, has opened an office at 119 E. Calhoun St., Woodstock, Ill.

New Firms, Firm Changes

• Fred C. Allen, for 25 years associated with Crane Co. and Armstrong Cork Co., announces the establishment of Building Materials Service, with offices at 101 Park Ave., Rm. 723–4, New York 17, N. Y.

• Frankel and Curtis, Architects and Engineers, have announced that, following the death of L. K. Frankel at Cincinnati on Nov. 27, 1949, the surviving member of the partnership, John J. Curtis, has arranged a new association with James S. Frankel and Melbourne Mills, both of whom have long been connected with the office of Frankel and Curtis. With offices remaining at 510 Central Bank Bldg., Lexington, Ky., the firm will continue the general practice of architecture, together with the engineering design of structural, heating, ventilating, air conditioning, plumbing and electrical work.

• The H. K. Ferguson Co., industrial engineers and builders, have announced acquisition of the O. D. Conover Engineering Co. of Cleveland, foundry design and construction specialists. The staff of the Conover organization will form the nucleus of a newly-established Foundry Division within the H. K. Ferguson Co. Oliver D. Conover, nationally-known foundry engineer who has directed the operations of his company since it was founded in 1932, will head the new Foundry Division.

• Robert Woods Kennedy, Architect, announces the formation of a new firm, Robert Woods Kennedy, Architect, and

(*Continued on page 192*)

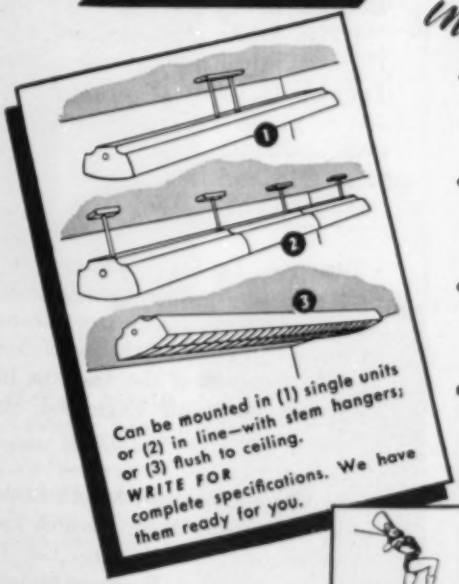
SAVE
UP TO
$5,000
ON AIR
CONDITIONING!
GOVERNAIR
COMPLETELY PACKAGED
AIR CONDITIONER
PAT. NO. 2,297,928
UNIT COOLERS
EVAPORATIVE CONDENSERS
AIR CONDITIONERS
Save water! Save space! Save installation time and money! Save operating costs! Yes, install Governair and save from $50 to $200 for each ton of the completely packaged Governair unit designed to fit your needs!
Experience proves Governair can save you up to $5,000 on a 50-ton Governair unit that gives greater dependability and more "engineered efficiency" than ever before!
If you want the best—if you want the most economical and reliable air-conditioning unit on the market . . . CHOOSE GOVERNAIR and SAVE!
GOVERNAIR
BLAST COILS FOR HEATING & COOLING

At long last . . . a L-O-N-G *light*

—a long lighting-fixture at a "short" price:

the new **Leader** *Slimline VARSITY in various one-piece lengths up to 8 ft.*

V-280


1
2
3
Can be mounted in (1) single units or (2) in line—with stem hangers; or (3) flush to ceiling.
WRITE FOR complete specifications. We have them ready for you.

- ***ECONOMY***
  Long fixtures mean fewer fixtures required—fewer fixtures to buy, to install, to lamp, to re-lamp. And the LEADER Slimline VARSITY—a quality-built fixture—is priced to fit tight budgets. In every way, an economy buy!
- ***SLIMLINE LAMP ADVANTAGES***
  Instant-starting . . . more light per watt . . . long life . . . handsome appearance . . . easier maintenance—single pin bases permit easy, quick relamping . . . Choice of brightness levels—more accurate light control.
- ***"40-60" LIGHT DISTRIBUTION***
  Due to its efficient design, the Slimline VARSITY illuminates directly and indirectly. 60% direct light is cast downward. 40% indirect light is cast upward . . . minimum shadow.
- ***MODERN BEAUTY***
  A streamlined, sleek avenue of light that shouts "up-to-date" in every way. A long, glossy, baked-enamel fixture—beautiful in its simplicity—at a beautifully low price.

No. V-280 Slimline VARSITY Specifications:
Fittings for two 75-watt Slimline lamps—available in various lengths up to 96". Instant-start, 100, 200, 300 and 425 milliampere operation. 18 gauge steel housing and channel. High-gloss baked enamel finish. 110-125 volts, 60 cycle A.C. Other voltages available.

Sold and installed only by the better electrical wholesalers and contractors.

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Leader Electric—Western: 800 One Hundredth Ave., Oakland 3, Cal.

(*Continued from page 190*)

Associates, Ronald Gourley, Richard Hamilton and Byron Franklin. The firm has offices at 687 Boylston St., Boston, Mass. Mr. Kennedy was formerly a member of the firm of Kennedy & Smith.

• A. V. McIver, Architect, has announced the admission to junior partnership of two members of his staff, William J. Hess and Knute S. Haugsjaa. The firm name will be A. V. McIver & Associates, Architects.

• James J. Pollard and Julian A. Altobellis announce the formation of the firm of Pollard and Altobellis, architects and engineers, with offices at 1207 Peachtree St., N.E., Atlanta, Ga.

• William G. Wells, A.I.A., A.S.C.E., and Richard L. Meagher, A.I.A., announce that the partnership under the firm title of Brown, Wells and Meagher is discontinued. Wells and Meagher, Architects and Engineers, with W. E. Allen, registered professional engineer, associate, will continue to practice in the same offices, at 118½ W. Campbell Ave., Roanoke, Va.

New Addresses

The following new addresses have been announced:

David C. Baer, A.I.A., 1202 Bissonet, Houston, Tex.

Harford Field, A.I.A., 153 E. Front St., Traverse City, Mich.

Stuart Frost, Architect, 1 E. Putnam Ave., First National Bank Bldg., Greenwich, Conn.

Hall, Border and Donaldson, Architects, 2517 St. Paul St., Baltimore 18, Md.

Leon LeGrand, Architect, Rm. 110, Stokes Bldg., Greenville, S. C.

Laurence M. Loeb, Architect, 406 Mamaroneck Ave., White Plains, N. Y.

Robert Nerem, Consulting Engineer, 624 S. Michigan Ave., Chicago 5, Ill.

New Jersey Chapter, The American Institute of Architects, and the New Jersey Society of Architects, executive headquarters, 27 Washington St., Newark 2, N. J.

Porter, Barry & Switzer, Consulting Engineers, 545 Lafayette St., Baton Rouge, La.

Eberle M. Smith Associates, Inc., 153 E. Elizabeth St., Detroit 1, Mich.

Bolton White, Architect, and Jack Hermann, Architect, 75 Castle St., San Francisco 11, Calif.

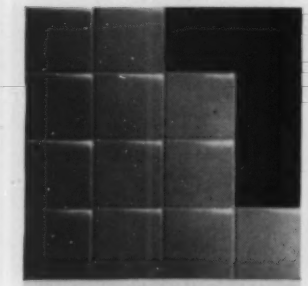
ELECTIONS APPOINTMENTS

• Titus G. LeClair, assistant chief electrical engineer, Commonwealth Edison Co., Chicago, has been nominated to succeed James F. Fairman of New York as president of the American Institute of Electrical Engineers. Mr. Fairman's term expires July 31.

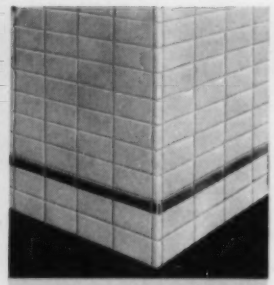
• Officers for 1950 of Arthur D. Little, Inc., Cambridge, Mass., research and engineering organization, are: Earl P. Stevenson, president; Raymond Stevens and Leroy F. Marek, vice presidents; Howard J. Billings, treasurer; Frank N. Houghton, secretary and assistant treas-

(*Continued on page 194*)

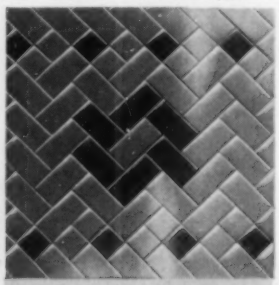
LOW IN COST · LIGHT IN WEIGHT
Enduring Beauty!
HASTINGS AIRCRAFT ALUMINUM alumitile
Guaranteed by Good Housekeeping



INSIDE FINISH
Attractive, smooth, lustrous enamel finish *permanently* bonded to sturdy aircraft aluminum . . . 14 vital colors . . . will not crack, peel or chip. Easy to clean.



OUTSIDE FINISH
A choice of 7 beautiful exterior colors in regular or embossed finish, applied by an exclusive process that insures a maximum of color control, density and uniformity.



SELF-DECORATING
A variety of sizes and colors permits modern decorative designs on interior or exterior walls . . . each job tailored to individual requirements for distinctive, lasting beauty.

FIREPROOF . . .
RUSTPROOF . . . WEATHERPROOF
HASTINGS *alumitile* is impervious to fire, rust and water, and cannot corrode. May be used *anywhere* indoors or outdoors with gratifying results. It has a gleaming bone-hard enamel finish . . . the lifetime colors are baked on. This amazing wall facing is enjoying ever increasing popularity in the construction of new buildings and the modernization of old. It strikes a modern tone which has brought enthusiastic endorsement from leading decorators, architects and contractors. Yet its cost is surprisingly low, its strength and adaptability almost unbelievable.

SCORES OF USES
The wide versatility of HASTINGS *alumitile* is expressed in its countless uses for homes, institutions, business buildings. It is ideally suited for bathrooms, kitchens, laundries, utility rooms; for dairies, bottling plants, breweries, bakeries, pharmacies, hotels, hospitals, dental offices; for store and theatre fronts, lobbies, service stations.

METAL TILE PRODUCTS, INC.
HASTINGS, MICHIGAN
Makers of Hastings alumitile, alumi-SHIELD awnings, doorhoods, mouldings and flashings

EASY TO APPLY—
EASY TO SELL
Offers consistent quality, sanitary sealing, insulation value, handling flexibility, scope for design, uniformity of workmanship—all at a marked saving in labor hours.

120 SQ. FEET WEIGH ONLY 37 LBS.

STRENGTH WITHOUT BULK
Save on bulk; save on shipping and handling costs; save on storage space. Lightweight HASTINGS *alumitile* is packaged compactly for convenience and economy. Well adapted to large wall areas where weight and square-foot costs are important factors.

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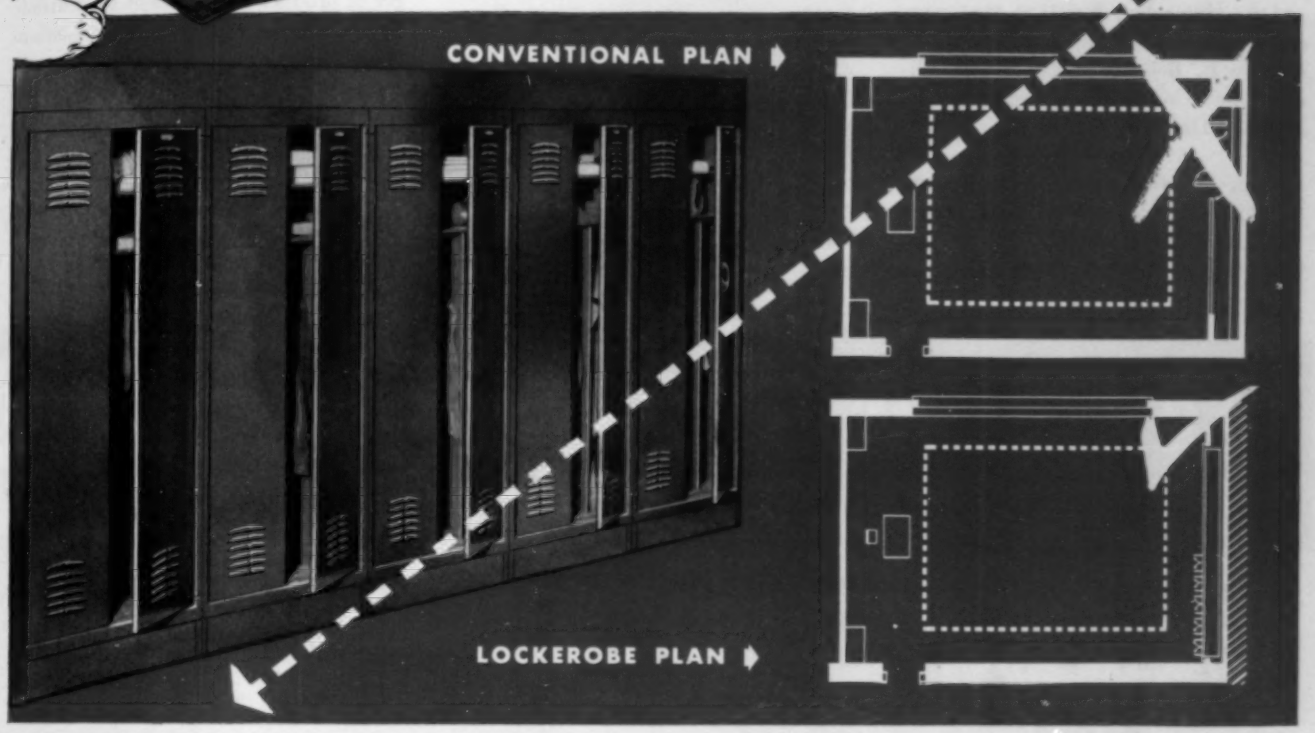
Cut Building Costs with



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"SIMULTANEOUS OPENING—MASTER DOOR CONTROL"

Medart Steel Lockers available in all standard types and sizes... either recessed or free standing. Write for descriptive literature.

Medart Steel Cabinets provide convenient and economical storage space for valuable supplies and clothing. Write for descriptive literature.

Compare the floor plans above. Here is a graphic illustration of the practicable possibility of reducing the cubic area of school buildings . . . representing savings of hundreds of dollars in construction costs. Compare the recess depth of 16 inch Lockerobes with the space waste (and higher upkeep!) of ordinary elementary school wardrobes or separate cloakrooms.

The Medart Lockerobe is a completely enclosed, self-contained assembly and may be installed in unfinished recesses, thus entirely eliminating today's costly expenses of plaster or tile walls, overhead framing, finished flooring . . . and future maintenance costs!

The Lockerobe, featuring the exclusive "Simultaneous Opening—Master Door Control," was developed by Medart at the request and with the cooperation of leading architects and school authorities to provide a practicable storage facility for elementary school use. The teacher, not the pupils, operates the Medart Lockerobe . . . ensuring safety, quiet . . . and order in the classroom.

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Write for descriptive literature . . . send your plans for suggestions.

SEE OUR CATALOG IN SWEET'S

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FRED MEDART PRODUCTS, INC.

3540 DEKALB ST. ST. LOUIS 18, MO.

Leadership for over 75 years in School Equipment

THE RECORD REPORTS

(*Continued from page 192*)

urer; Allan L. Spurr, comptroller; Howard F. Hamacher, assistant treasurer; and Helge Holst, assistant secretary. Charles B. Belknap of the Owens-Illinois Glass Co. has been elected to the Board of Directors.

• Hugh M. Hughes has been reelected to the presidency of the Building Trades Employers' Association of New York City. Other officers for 1950 are: Fred J. Driscoll, vice president; Eugene Duklauer, second vice president; Perry S. Dewey, third vice president; J. George Costello, treasurer. William G. Wheeler, who had been reappointed to his 23rd term as secretary, died suddenly February 21, a few minutes after giving his report at the BTEA annual meeting.

• Roger Bowen, formerly with the U. S. Signal Corps, has been named head of the Engineering Department of Cannon Electric Development Co., Los Angeles.

• Roy D. Haworth Jr. is the new manager of product development for Carbide Alloys Division of Allegheny Ludlum Steel Corporation. Mr. Haworth was formerly employed by Armour Research Foundation in Chicago as supervisor of Abrasion Research.

• Thomas I. Crowell Jr. and Charles B. Cooke have been elected vice presidents of Ford, Bacon & Davis, engineers-constructors, of New York, Chicago, Philadelphia and Los Angeles.

• Col. John N. Gage, commanding officer of the U. S. Army Quartermaster Depot in Chicago, has been named managing director of the First United States International Trade Fair to be held in Chicago Aug. 7–19, 1950.

• Herman Snider, general manager of Acme Door Co., Hoquiam, Wash., has been reelected president of the Fir Door Institute for 1950. Other officers elected at the annual meeting in Tacoma are: Charles E. Devlin, general sales manager, Simpson Logging Co., Seattle, vice president; W. M. MacArthur, vice president of Wheeler Osgood Co., Tacoma, treasurer; A. E. Lundgren, president of Vancouver Door Co., Montesano, secretary; Thomas B. Malarkey, vice president, M & M Wood Working Co., Portland, Ore., trustee.

• Milton A. Karp has been appointed chief engineer of the Luria Engineering Corp., New York City, designers and fabricators of standard, steel-frame industrial, commercial and airport buildings. Mr. Karp will head Luria's enlarged engineering department, which is being moved to the company's Bethlehem, Pa., plant.

• Mrs Patricia H. Kelley is the new research group director for Foster D. Snell, Inc., consulting chemists and engineers.

• G. Donald Kennedy has been appointed consulting engineer and assistant to the President of the Portland Cement Association.

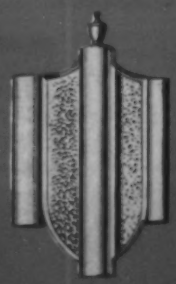
• The appointment of Miss Jane Kidder as special consultant to the New York State Dormitory Authority has been announced by Clifton C. Flather, ad-

(*Continued on page 196*)

WOMEN DON'T WANT..

NUTONE CURES BOTH

Don't plan an *unfriendly* home for your clients—with old-fashioned, ear-splitting doorbells and irritating kitchen odors. Specify a NuTone Door Chime for a warm, friendly welcome at the front door—and specify a NuTone Kitchen Ventilating Fan for sweet, fresh air in the kitchen all year long. Make every home you plan *complete* with these two NuTone features. Write for FREE literature.



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Electric Door Chimes

Kitchen Ventilating Fans

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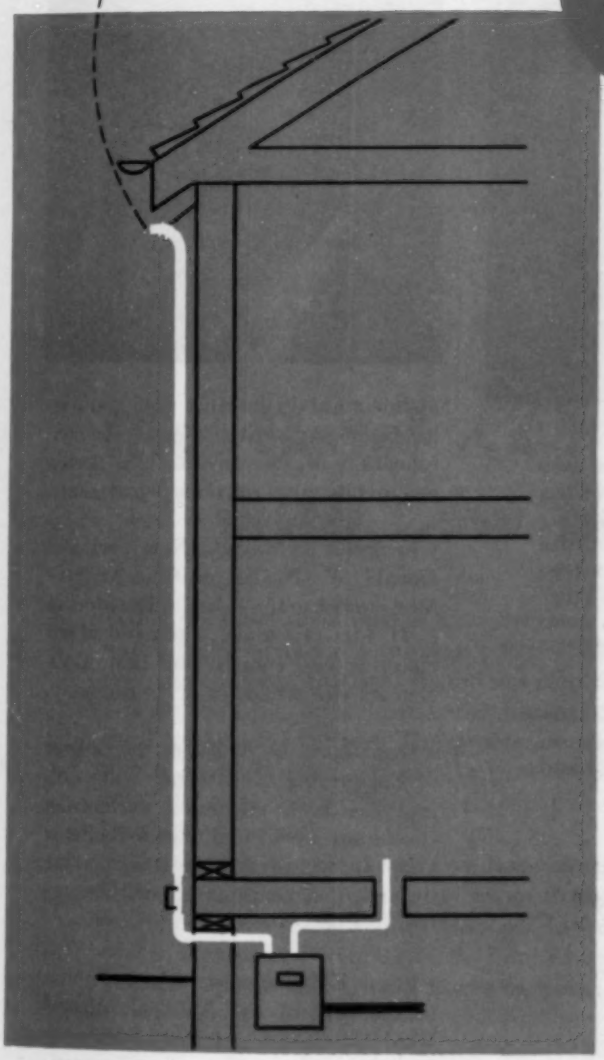
FIBERGLAS* YARNS HELP 3 WAYS

to make Service Entrance Cable easier to work with ...longer lasting!



Today, Fiberglas yarns are used for the outer braid, for conductor coverings—*and for reinforcement of moisture seal tapes.*

Fiberglas yarns provide high tensile strength with minimum bulk—characteristics that help cable manufacturers provide you with service entrance cable that is easy to install.

And remember, Fiberglas yarns help make service entrance cable *last longer*, because glass yarns don't rot, don't burn, don't absorb moisture. They do resist corrosion.

To be sure you get all these properties in the cable you install, look for the Fiberglas glass yarn components!

Owens-Corning Fiberglas Corporation, Textile Products Division, Dept. 831, 16 East 56th Street, New York 22, N. Y.

* Fiberglas is the trade-mark (Reg. U. S. Pat. Off.) of Owens-Corning Fiberglas Corporation for a variety of products made of or with glass fibers.

OWENS-CORNING FIBERGLAS *Yarns*

MICHAELS "Time-Tight" Display Cases

When you specify Michaels "Time-Tight" Display Cases you may be sure of perfection in exhibition. In Michaels cases exhibits stand out like jewels in a beautiful setting. Visibility is perfect from every angle. Displays are kept clean and safe, too, because Innerlocking Frames, an exclusive feature, keep exhibits free from dust, and prevent handling or theft. Michaels "Time-Tight" Cases are available in a wide range of styles and sizes to meet virtually all exhibition requirements. Or special cases will be designed to meet individual specifications.

Every architect should have a complete file on Michaels "Time-Tight" Display Cases. Write for literature containing details on structural features, case styles, various lighting arrangements and other specifications.

MICHAELS PRODUCTS

Bank Screens and Partitions
Welded Bronze Doors
Elevator Doors
Store Fronts
Lettering
Check Desks (standing and wall)
Lamp Standards
Marquises
Tablets and Signs
Name Plates
Astragals (adjustable)
Stair Railings (cast and wrought)
Wrought and Cast Radiator Grilles
Grilles and Wickets
Kick and Push Plates
Push Bars
Cast Thresholds
Extruded Thresholds
MI-CO Parking Meters
Museum Trophy Cases

The MICHAELS ART BRONZE Co., Inc., 234 Scott St., Covington, Ky.

★

THE RECORD REPORTS

(*Continued from page 194*)

ministrative director. Miss Kidder will concentrate on planning of interiors, color and coordination of furniture, textiles, floor coverings and lighting for new dormitories for the state teachers colleges and agricultural and technical institutes.

• Elmer A. Lundberg has been named director of architectural development and design for Pittsburgh Plate Glass Co. Mr. Lundberg has been director of

architectural design since 1945 and now heads a department created by the consolidation of the architectural design and architectural relations departments.

• Frederick J. Mayo of New York and Donald W. Neville of Chicago have been elected to the Board of Directors of F. H. McGraw & Co., international engineering and construction firm. Both men are vice presidents of the company.

• Dean Lorin G. Miller of the College of Engineering of Michigan State College has been appointed engineering consultant by United States Radiator Corp. He will participate in engineering research and development of Corporation products.

• Frank E. Parsons has been appointed to the staff of the National Mineral Wool Association as technical engineer. Mr. Parsons was formerly vice president, director and general manager of Insulation Industries, Inc., at Janesville, Wis.

(*Continued on page 198*)

YOU CAN BE **SURE**.. IF IT'S

Westinghouse

Rice Hotel, Houston, Texas
Architect: Kenneth Franzheim, Houston
Mechanical Engineer: Reg. F. Taylor, Houston
Electrical Contractor: Fischbach & Moore of Texas, Inc., Houston
Load: 3,000 kva for power and lighting to serve 1,000 guest rooms, ballrooms, banquet rooms, dining rooms

Rice Hotel *REMODELS and SAVES* with Low Impedance Bus Duct

While the basic advantage of using bus duct is to secure more adequate secondary power distribution, the choice of bus duct should not stop there.

Take the case of the installation limitations at the Rice Hotel, Houston. The problem: to completely remodel and air condition from basement to penthouse—and without interruption of "business as usual".

The answer: Westinghouse Low Impedance Bus Duct. Its compact design and freedom from protruding members permitted passage in places where dimensions were critical. Limited space, because of pipe and air duct systems, ruled out ordinary wiring, as well as other makes of bus duct.

Ask your nearby Westinghouse representative to tell you all the advantages of Westinghouse Bus Duct, available in four popular types. Or write Westinghouse Electric Corporation, P. O. Box 868, Pittsburgh 30, Pennsylvania. J-30012

Westinghouse

BUS DUCT

DESIGN TESTED AND VERIFIED IN THE Westinghouse HIGH POWER LABORATORY

KNIGHT C. COWLES,
ARCHITECT

Wood Windows aid your planning

with these three "V"s

Versatility! Ponderosa Pine windows do far more than provide a view. These wood windows help *insulate* against heat and cold . . . resist sweating, won't rust or corrode. Their surface provides an excellent base for any kind of finish. For quick, easy installation, they are available as prefitted, pre-assembled window units—complete with efficient weatherstripping and mechanical sash balances.

Variety! Whether the homes you plan are modern or traditional, Ponderosa Pine stock-design windows offer the *right* types for your specification. Double hung, casements or picture windows—in many styles—all are ready to widen your scope in window selection. Available in modular standard sizes.

Value! Ponderosa Pine windows are economical. Low in cost, they save money for owners year after year because they cut down maintenance problems—because they hold paint in a vise-like grip and stand a lifetime of hard use in any climate. They are available, chemically treated, to add extra years of resistance to moisture, fungus growth and insect attack.

You'll want this New Booklet about Ponderosa Pine Woodwork

—crammed with photographs of window, door, cabinet and other woodwork installations, "Ponderosa Pine Woodwork for Today's Home" is essentially an idea book. You'll want it for constant reference—and a copy is yours for the asking. Mail the coupon!

for friendly living

Ponderosa Pine
WOODWORK

Ponderosa Pine Woodwork
Dept. TAR-4, 38 South Dearborn Street
Chicago 3, Illinois
Please send me a copy of "Ponderosa Pine Woodwork for Today's Home."

Name.....

Address.....

City.....*Zone*.....*State*.....

THE RECORD REPORTS

(*Continued from page 196*)

• The New York Association of Consulting Engineers has reelected William Eipel, of the structural engineering firm of Tuck & Eipel, president for the coming year. Other officers reelected were: John W. Hennessy of Syska & Hennessy, vice president; Harry Bond, consulting engineer, treasurer; and W. Donald Christie, consulting engineer, secretary.

• Architect Alfred Shaw of Chicago has been appointed a director of Research Foundation, a non-profit group which subsidizes production and distribution of the anti-tuberculosis vaccine, BCG, at Tice Laboratory, Chicago.

• Appointment of Lewis R. Smith as product development engineer of the Remington Air Conditioning Division has been announced by Herbert L. Laube, president.

• Officers for 1950 have been elected by the Urban Land Institute as follows: Richard J. Seltzer, Philadelphia, president; Foster Winter, Detroit, and Warren Morris, Cleveland; vice presidents; Herbert U. Nelson, Chicago, secretary; and L. D. McKendry, Chicago, treasurer. Mr. Morris is new in his post; other officers were all reelected.

• Benjamin Weintraub, formerly in charge of the hospital program in the New York office of Skidmore, Owings and Merrill, has been appointed to the staff of the Blickman Hospital Consultants. S. Blickman, Inc., of Weehawken, N. J., are manufacturers of equipment for hospitals and institutions.

(*Continued on page 200*)

DON'T BLAME YOUR PAINTING CONTRACTOR

You've often seen unsightly rust stains from metal sash on the adjacent brick and stone surfaces. You need never blame your painting contractor for unsightly stains caused by rust! You can *prevent* rust . . . and at no extra cost . . . simply by specifying RUST-OLEUM as the *shop coat, primer and finish coat* on all metal rust can attack.

But, specify Rust-Oleum in the *first stages* . . . when design, engineering and contracting take form . . . before actual delivery of material for the job. Rust-Oleum costs no more than quality material you may now be using . . . and is easy to apply at no added expense.

Rust-Oleum is tested and proved by a host of nationally known users. Rust-Oleum *stops* and *prevents* rust! RUST-OLEUM protects metal from rust with a tough, pliable film that dries to a firm finish. Rust-Oleum defies sun, rain, snow, salt air, smoke, fumes and other rust-producing conditions . . . and adds longer life wherever it is used. Girders, plates, stacks, gutters, roofs, tanks . . . every metal surface can be protected surely, safely and *economically* with RUST-OLEUM.

Rust-Oleum *beautifies as it protects* because it is available in many attractive colors including aluminum and white. Rust-Oleum can be applied to already rusted surfaces with minimum preparation . . . *it is not necessary to remove every appearance of rust!*

So, take the sure way to stop rust. Specify Rust-Oleum on all rustable metal, inside or out. It costs less ALL WAYS to do the job right.

Rust-Oleum is stocked and sold by leading industrial distributors in all principal cities of the United States and Canada. See Sweets for complete catalog and nearest source of supply, or write us direct for complete information.

Architects, Engineers, Builders

If you have a client with a rust problem, and would like a free survey and recommendations, send his name and address on your business stationery. A qualified Factory Representative will arrange this FREE Service, and it includes a trial size of Rust-Oleum for specific test purposes. These's no obligation on your part. Write today.

**Names on request*

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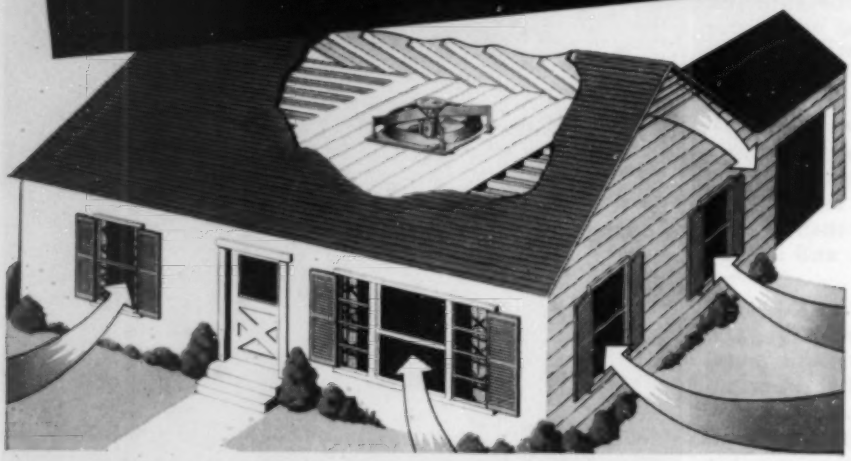
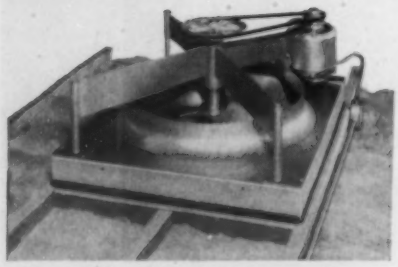
give your homes low-cost
Climate Control





Quiet, powerful, compact

New automatic ceiling shutter

Easily installed—provides cool comfort for hot summer months

Hunter Package Attic Fan is a complete home-cooling system . . . low in initial cost, economical to operate and designed for fast, inexpensive installation. No other small investment gives home-owners so much summer comfort.

Easy to Install: Delivered on the job as a compact unit, complete with ceiling shutter and modern metal trim, the Package Fan is quickly installed in ceiling opening. No suction-box to build; no accessories needed. Requires only 17″ attic clearance, fits any standard hallway.

Performance Guaranteed: Quiet, trouble-free operation is assured by Hunter's 64 years' experience in manufacturing fans, exclusively. Available in capacities from 4750 to 9500 CFM, with air delivery ratings certified. Fan guaranteed 5 years; motor and shutter, 1 year.

MAIL FOR COMPLETE DATA

Hunter Fan and Ventilating Company
396 South Front Street,
Memphis, Tenn.

Send copy of "How to Cool for Comfort" to:

Name.....

Address.....

City & State.....

Hunter *Package* Attic Fans

THE RECORD REPORTS

(*Continued from page 198*)

• Douglas Whitlock, chairman of the Board of Structural Clay Products Institute, has been chosen national councillor and delegate to represent the Institute at the 38th annual meeting of the U. S. Chamber of Commerce.

• G. Walter Sutton & Son, Knoxville, Tenn., have been appointed sales engineers for J. A. Zurn Mfg. Co., Erie, Pa.

• Harry E. Tear has been elected executive vice president and general superintendent in charge of construction for the White Construction Co. Other recent appointments include: Max Birman, vice president in charge of engineering; Robert A. Escher, vice president in charge of new business; and Herbert Anderson, purchasing agent.

AWARDS

Edward B. Reed of Princeton Gets Marble Institute Prize

First honors, and a prize of $100, went to Edward B. Reed of Princeton University in the Beaux Arts Institute of Design Competition for the Marble Institute of America Prizes.

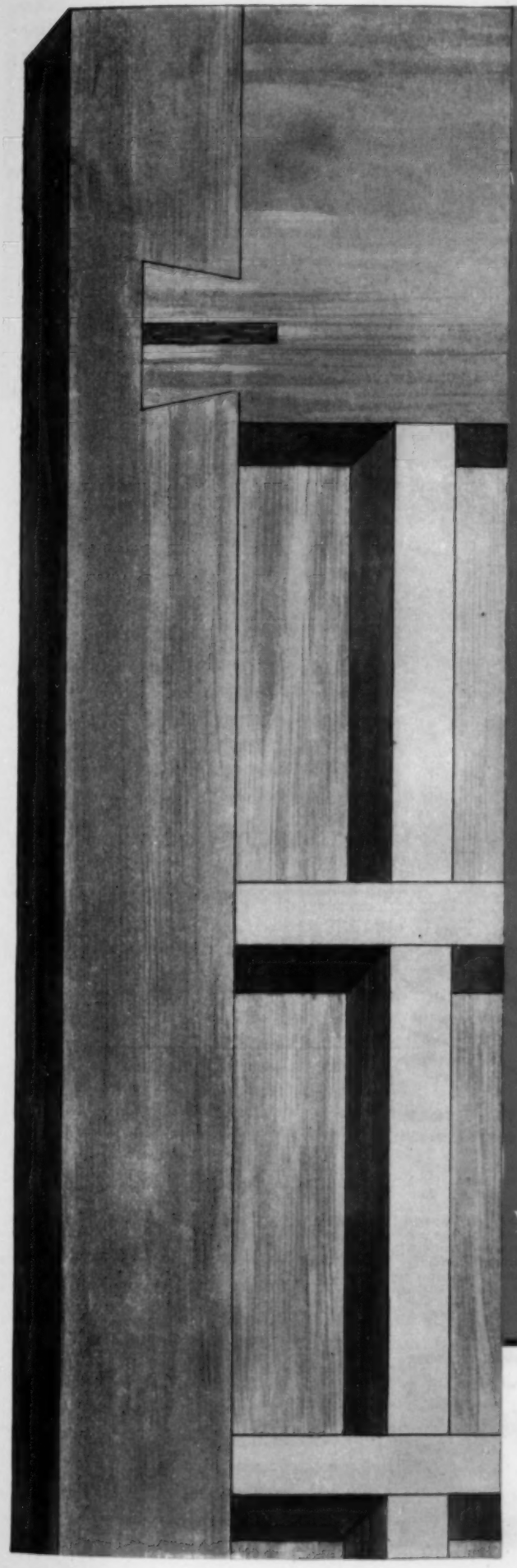
Other prizes were awarded as follows: second prize ($75) — Ray S. Febo, Western Reserve University; third prize ($50) — A. Perry Morgan Jr., Princeton University; fourth prize ($25) — Louis Eyster, Western Reserve University; honorable mentions — W. B. Henderson and Tom Cole, Western Reserve University.

The problem submitted by the Institute was prepared by Howard Lovewell Cheney, A.I.A., of Chicago. It required participating students to design the interior of a court house lobby, and afforded them an opportunity to study "an interior of substantial scale, with particular emphasis on good lighting, refined detail and the decorative qualities of marble, with which other rich materials may be combined in a discriminating manner."

Thirteen schools of architecture were represented in the competition, in which 193 students took part.

The award jury was headed by Charles W. Beeston, chairman, and included Max Abramovitz, Charles H. Bauer Jr., Robert Carson, Alonzo W. Clark III, Francis X. Gina, Francis

(*Continued on page 202*)



MORE for your money, in MENGEL *Hollow-Core Flush* DOORS!

Installation and finishing expense leads most architects to demand the extra beauty, durability, economy and *sales appeal* of Mengel Hollow-Core Flush Doors.

1. *Balanced* seven-ply construction to provide controlled reaction in changing weather conditions.
2. Hardwood construction throughout — stronger, more durable, free from grain-raising, more easily and economically finished.
3. Exclusive Insulok grid core material has inherent resiliency, cannot cause warping, nor transfer grid pattern to faces.
4. Greater strength. Adequate core stock surface area provides maximum gluing surface and resistance to warpage.
5. Precision key-locked dove-tailed joinings of stiles and rails add strength and stability.
6. Ready to finish. Door faces are smoothly belt-sanded. Stiles are machine-planed at factory — prefit to standard book sizes.
7. Fully guaranteed. Each door must meet rigid quality control standards and constant inspection throughout manufacture.
8. Mengel Hardwood Flush Doors are economical — no mouldings to paint — no corners to collect dirt. Smooth hardwood surfaces are less absorbent and less costly to finish — easier to clean and longer-lived.

Write for complete specifications. Use the convenient coupon.

Also see —
MENGEL STABILIZED SOLID-CORE DOORS
the finest products of their type on the market.

The Mengel Co., Plywood Division
2302 South Fourth Street, Louisville, Ky.

Gentlemen: Please send me, without obligation, full specifications on ____ Mengel Hollow-Core Flush Doors; ____ Mengel Stabilized Solid-Core Doors.

Name _____

Street _____

City _____ State _____

(*Continued from page 200*)

Keally, John M. Liptak, Roy E. Mayes, Benjamin Moscowitz, Ralph Myers, Robert K. Posey, Jedd S. Reisner, Hugh N. Romney, Daniel Schwartzman, Abel R. Sorensen, Maurice D. Sornik, and Kenneth K. Stowell.

A. William Hajjar of Pennsylvania State College was school representative. Roy E. Mayes, president of the Marble Institute, participated in the judgment.

Film Interior Sets Winners For 1949 Announced by A.I.D.

Sets from "Luxury Liner," produced by Metro-Goldwyn-Mayer Studios, won a First Award for Supervising Decorator Edwin B. Willis in the 1949 Film Interior Sets Competition conducted by the American Institute of Decorators.

Sharing the First Award with Mr. Willis were Set Decorator Arthur Krams and Art Directors Cedric Gibbons and Paul Gruesse.

Sets from two films received Honorable Mentions — one was "Adam's Rib," produced by Metro-Goldwyn-Mayer, and the other was "Alias Nick Beale," produced by Paramount Pictures, Inc.

Upson Company Receives Engineers' Merit Award

The Upson Co. of Lockport, N. Y., has received a Merit Award of the American Society of Industrial Engineers.

Robert Law Crinnian of Detroit, national president of the society, made the presentation at an informal ceremony in the company offices.

The award, Mr. Crinnian explained, is the highest honor the Society can confer on organizations considered to have made the most outstanding contributions to the advancement of the industrial arts and sciences in their respective fields.

Recent similar awards have been made to the Hamilton Watch Co., the Detroit-Michigan Stove Co., Radio Corp. of America, Briggs Manufacturing Co.'s plumbing ware division, Nash-Kelvinator and others. Only 15 awards will be made during 1950, Mr. Crinnian said.

BUILDING NOTES

Beverly Hills Hotel To Build $1,250,000 Wing

The "Glen Way Wing" of the Beverly Hills Hotel will be the next step in the long-range modernization program of the hotel, which completed its "Crescent Wing" at a cost of $1,500,000 last December.

The new wing, which is expected to cost $1,250,000, will be constructed from plans by Paul R. Williams. It will be of Class A concrete and steel construction with a total of 88 guest rooms and a two-level basement garage with a 125-car capacity.

New Johnson & Johnson Lab Planned in New Brunswick

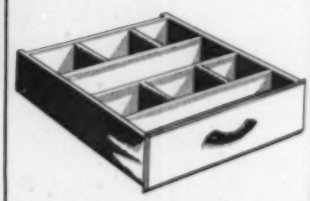
A research center in New Brunswick, N. J., will be built by Johnson & Johnson, manufacturers of surgical dressings, to consolidate and expand their present research activities.

(*Continued on page 204*)

COMPLETE OR PARTIAL INSTALLATION BACKED BY YEARS OF "KNOW-HOW"

Whether your requirement is a few additional pieces of furniture or fully equipped new departments . . . laboratories, homemaking, art, vocational or industrial shops . . . Sheldon provides standard and modified units that are outstanding for excellence of design and construction . . . qualities that long and hard usage only serve to emphasize. In experience and facilities, Sheldon is unsurpassed; and Sheldon's record of customer satisfaction is unique.

Look TO SHELDON For LEADERSHIP!



IT'S THE DETAILS THAT MAKE THE DIFFERENCE

Whether of wood or metal, Sheldon furniture is soundly engineered and carefully constructed. Drawers and doors continue to function properly despite hard usage. Drawers are equipped to receive partitions that are easily arranged and rearranged to accommodate contents for orderly storage and to prevent breakage . . . Just one more example of Sheldon's thoroughness in detail.

The key to your complete equipment problem

E. H. Sheldon & COMPANY
MUSKEGON, MICHIGAN

IMPORTANT CONSIDERATIONS

for the Architect about to recommend A SCHOOL TIME AND PROGRAM SYSTEM

FIRST, let's define the function:

A School Time and Program System has two primary functions: (1) to give the correct time in each classroom, and (2) to sound signals at pre-determined intervals. It must work automatically 5 days a week (often longer), in buildings jam-packed with kids and staffed by teachers and a principal who have neither the time nor the inclination to fuss with complicated gadgets.

SECOND, let's examine the features:

The installation consists of a Master Clock — Program Controller with Secondary Clocks and Buzzers in classrooms (bells elsewhere). In order to function smoothly the system should have these advantages:

1 Master Clock-Program Controller must be "on time" together at all times. In the STANDARD System they are one and the same mechanism, geared together. They can never get "out of step."

2 Master Clock and Secondary Clocks must also reveal exactly the same time.

In the STANDARD System there is only one synchronous motor — a heavy-duty, slow speed, precision-built unit located in the Master Clock. Secondary Clocks have no motors, electrical contacts, tubes or other complicated parts — require no cleaning, oiling, adjustment or renewal.

Other synchronous systems have one or two motors in each secondary clock and 1, 2 or 3 motors in the control unit where the failure of one disarranges the entire system.

3 The Master Clock-Program Controller should keep running during current interruptions, so that when current is resumed the signals will sound on time.

In STANDARD Systems this is accomplished without a catching-up-to-time period — and without the use of batteries which require frequent attention or renewal.

4 Each Secondary Clock should reset itself automatically after current failure.

In STANDARD Systems each clock has a 25-minute corrective range (slow or fast) and the reset feature functions in two seconds, silently. In certain other systems the Secondary Clocks must be reset in groups.

5 The Program Controller should cover all the programming needs of the entire school. This means complete service with periods down to the minute, and silence during nights, weekends, etc.

Furthermore, it must be so simple that anyone can set up a program in a few minutes, and change schedules at a moment's notice.

STANDARD employs a special paper tape, marked in minutes and hours, and punched by the Principal according to the schedule desired. Spare tapes, with different schedules, can be installed in a few seconds when necessary. The tapes will last 15 years or longer, and are free.

Other systems employing lugs, pins, cams, etc., are not only difficult to set up, but are subject to failure when pins drop out or break off.

6 For best performance and long-range economy, engineers agree that the wiring system for a clock and program service should be kept separate from light and power lines.

7 The system should be backed by years of dependable operation in schools under all conditions.

STANDARD can produce ample evidence of dependable performance in case histories running back to the turn of the century.

We shall be pleased to send you our new Bulletin No. 178, and to provide you with names of satisfied users to whom you may refer. Perhaps we can also assist you in preparing specifications for your time and program system. Please get in touch with us.

STANDARD ELECTRIC TIME COMPANY

STANDARD

25 Branch Offices

81 Logan Street Springfield, Massachusetts

 (*Continued from page 202*)

Above: Photo of rendering of Johnson & Johnson's projected research laboratory

NEW, REVOLUTIONARY.. VERSATILE

SOLAR AIR-FLO®

ENGINEERED ALL-WEATHER Windows

FOR DRAFTLESS VENTILATION

Louvered sections are placed at top, bottom or sides of stationary window pane, according to design requirements. Units may be used singly or in groupings.

STOCK SIZES FOR A WIDE VARIETY OF DESIGN

Adjustable baffle doors regulate circulation of fresh air, winter and summer. Screens concealed in *air-flo* section, may be removed from inside for cleaning. Solar Air-Flo units fit into all kinds of walls, masonry or wood . . . permit originality of design for all types of homes and buildings . . . provide weathertight insulation.

Solar Air-Flo windows allow the use of narrow mullions, come assembled with all exterior trim. Sill height and number of louvers may be varied to meet ventilation requirements. No precision work or special tools are needed for installation. Frames and sectional parts are made of either treated wood or extruded aluminum, as desired.

Beautiful Solar Air-Flo windows are in keeping with the modern trend . . . give individuality and distinction to exteriors, lend charm and an air of spaciousness to interiors. WRITE NOW for *free* descriptive literature and specification data, without obligation.

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Send free literature on Solar Air-Flo windows.
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SOLAR AIR-FLO, INC.
ELKHART, INDIANA

MAIL COUPON NOW!

The center will consist of a one-story, E-shaped laboratory building and a two-story administration building. The two buildings will have approximately 50,000 sq ft of floor space and will be staffed by 100 to 200 persons. The laboratory is designed to accommodate a 25 per cent increase in scientific personnel, and the building itself is planned for economical future expansion.

Of steel-frame construction, the laboratory will have exterior walls of buff ceramic tile, while the office section will have sandstone walls with large areas of glass. The two structures will share a 90-acre site with two buildings of affiliated companies.

Alexander P. Morgan, New York architect, designed the buildings, with Guy B. Panero, Engineers, as mechanical engineers and Strobel and Salzman as structural engineers. The project will be supervised by F. N. Manley, director of construction for Johnson & Johnson. Completion is scheduled for August.

Construction Under Way On Hotel for Venezuela

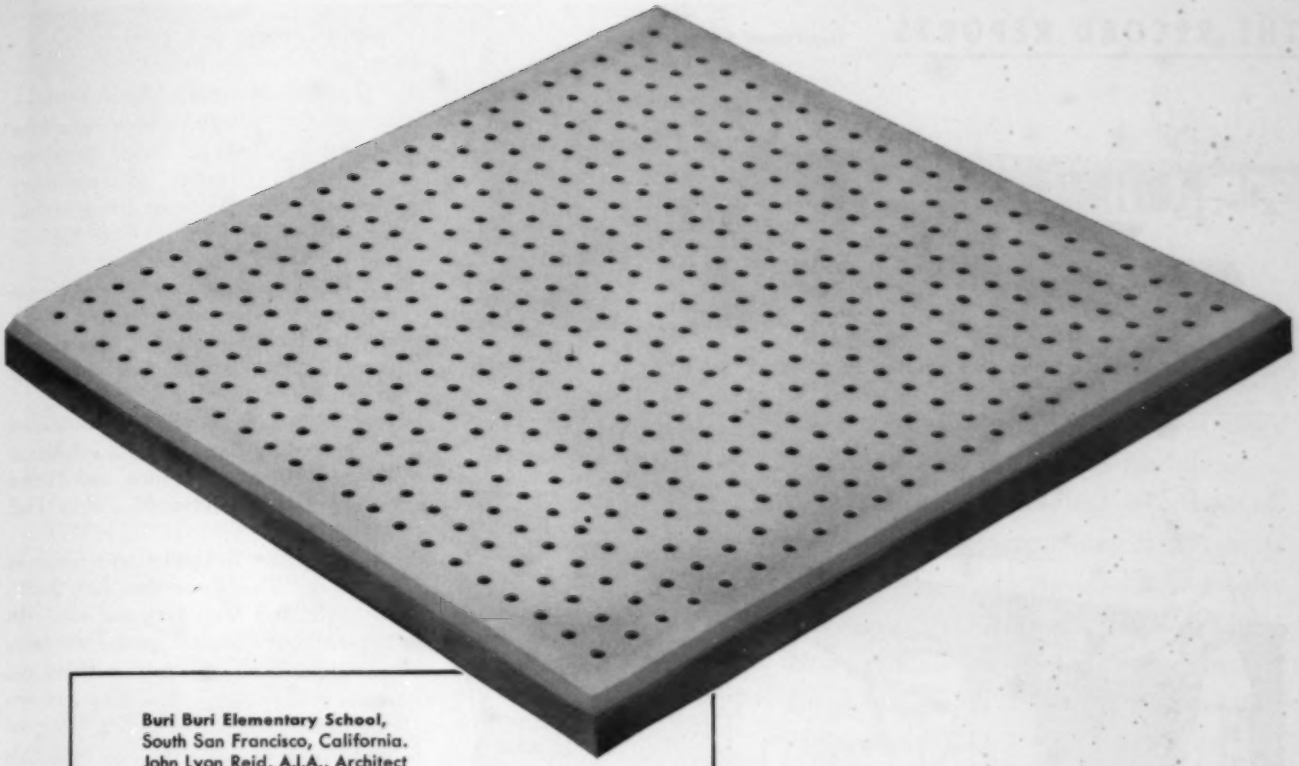
Award to American Pacific Industrial Corp. of Venezuela late in February of the contract for construction of the $6,000,000 Tamanaco Hotel in Caracas, Venezuela, was immediately followed by the announcement that ground would be broken within 30 days.

Holabird, Root & Burgee of New York, collaborating with Gustavo Guinand, of Caracas, are architects for the hotel. Plans call for a ten-story structure of reinforced poured concrete throughout, with approximately 430 rooms, all with baths. The building will be V-shaped, allowing for maximum sunlight, and oriented to take advantage of the fine view to the north across the Caracas Valley toward Mount Avila. Other features of the plan are a glass-walled night club opening onto a terrace which will be used for dining and dancing, a large swimming pool and a circulating ice water system fed from deep wells.

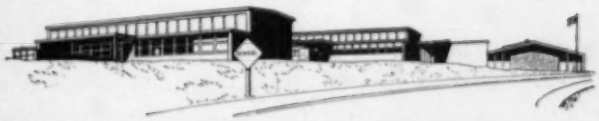
The Tamanaco will be built upon a ridge, with its lobby floor 80 ft above the level of the Playa Sucre, which it faces.

The Tamanaco is owned by the Hotel Tamanaco Campania Anonima, Gustavo A. San Roman, president, and was financed by local capital, the Venezuelan government and the Export-Import Bank of the United States. It is one of a world-wide chain of hotels being developed by Intercontinental, a subsidiary of Pan-American Airways.

(*Continued on page 208*)



Buri Buri Elementary School,
South San Francisco, California.
John Lyon Reid, A.I.A., Architect



"...Combination of Good Appearance, Light Reflection Qualities...Meeting Specified Sound Absorption"

...says architect of Buri Buri Elementary School

Simpson Acoustical Tile was specified and installed in classrooms in the Buri Buri Elementary School, one of the modern new school buildings described in the main feature article elsewhere in this magazine. Concerning selection of acoustical tile, Architect Reid has this to say:

"One of the most important features of a modern classroom is proper sound conditioning.

We have always exercised great care in designing schoolrooms for acoustical performance and in selecting materials to accomplish the desired end. Acoustical tile, such as was used in the Buri Buri Elementary School, having a combination of good appearance, light reflection qualities and meeting the specified sound absorption coefficient, is one of the most important elements of a properly sound conditioned classroom."

SIMPSON LOGGING COMPANY
Sales Division, 1065 Stuart Bldg., Seattle 1, Washington

1. WASHABLE FINISH
2. HIGHER SOUND ABSORPTION
3. HOLLOKORE DRILLED PERFORATIONS
4. FINISHED BEVELS
5. MORE BEAUTIFUL AND EFFICIENT

Only Simpson has all 5!

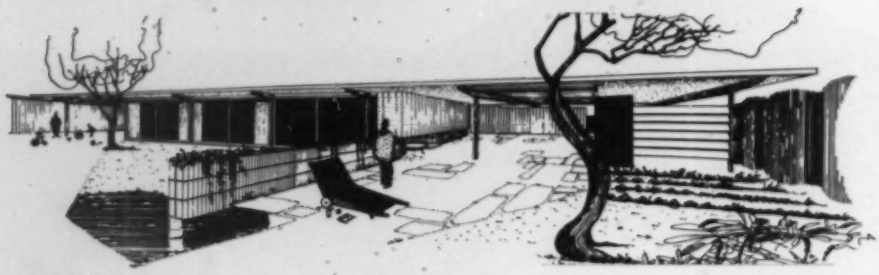
Simpson
QUALITY SINCE 1895

ACOUSTICAL TILE

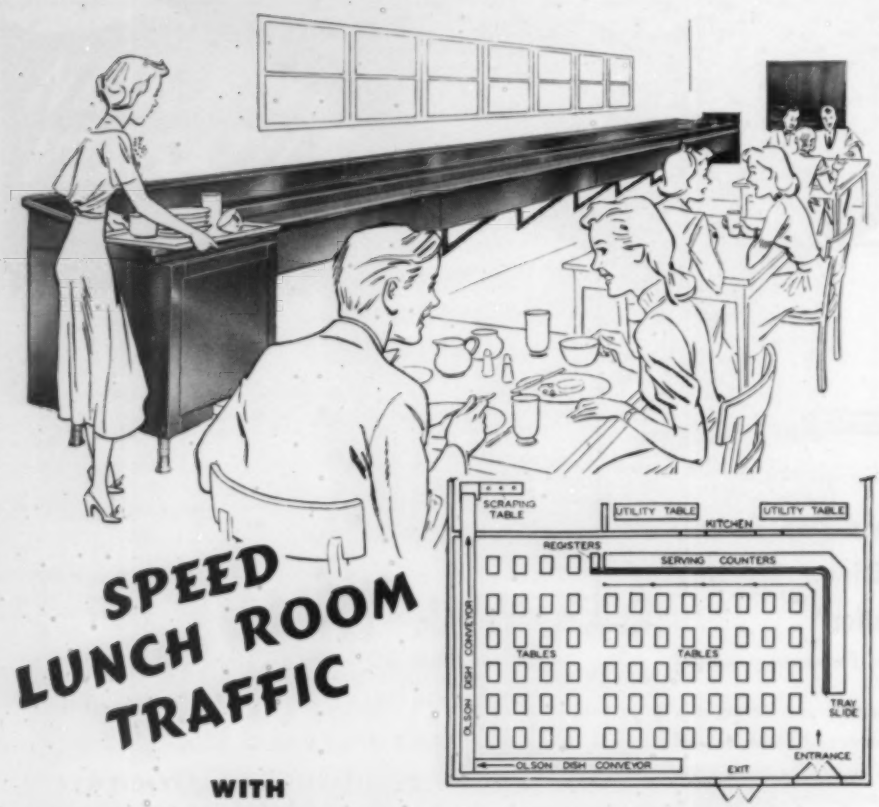
FOR BETTER SOUND CONDITIONING

THE RECORD REPORTS

(Continued from page 204)



Above: Indoor-outdoor living was stressed in design of exhibition house at Cleveland



SPEED LUNCH ROOM TRAFFIC

WITH

OLSON DISH TRAY CONVEYORS

The photo above shows an Olson Dish Tray Conveyor recently installed in the Woodrow Wilson High School, Tulsa, Oklahoma. The inset diagram shows a typical floor plan and indicates how one or more Conveyors can be conveniently located.

See our catalog in Sweet's File.

Olson Dish Tray Conveyors are the ideal equipment for school cafeterias. They provide fast, even flow of soiled dishes to the dishwashing area and shorter clean-up time between lunch periods. Each diner merely places his tray of soiled dishes on the Conveyor nearest his table or near the exit. Dishes move quietly, smoothly. The usual confusion is eliminated and breakage is reduced to a minimum.

Where dishwashing facilities are on another floor, a Subveyor can be installed to take the trays from the Conveyor and lift or lower them automatically.

Olson Dish Tray Conveyors and Subveyors are fast becoming standard equipment in modern schools and institutions all over the country. Write us today for full details.

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WITH THE A.I.A.

Buffalo-Western New York — Officers for 1950 have been elected as follows: Roswell E. Pfohl, president; Trevor W. Rogers, vice president; Thomas Imbs, secretary-treasurer; directors (for three years) Guy Baldwin and W. Newell Reynolds.

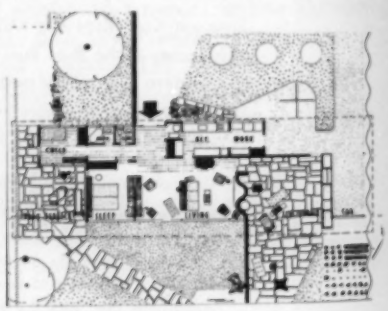
Cleveland — An exhibition house designed by a special committee of the chapter last month was providing a graphic illustration of the value of an architect's services.

Some 50,000 people were estimated to have seen the chapter's exhibit at the Seventh Annual Home and Flower Show at the Cleveland Public Hall March 4–12.

Design for livability was basic in planning "The House that Jack Built" for "Mr. and Mrs. Jack and son," the hypothetical clients. Specific attention was given in the design to activity and space relationships, flexibility and privacy, indoor-outdoor living. Advanced developments in structure, materials and building equipment were freely used.

Joseph Ceruti headed the special committee which initiated the project. On the committee were Alfred W. Harris, Robert A. Little, Ernst Payer, Wilbur Riddle and Edward Higgins, a student associate of the chapter representing the student chapter of the Institute at Western Reserve University.

Below: plan of Cleveland's model house



New York State — The Sidney L. Strauss Memorial Award, to be given annually for outstanding service to the architectural profession, has been established by the Association in honor of its late past president. The award, which will be a medal and a suitably inscribed certificate, will be announced Nov. 1. Candidates are to be nominated by constituent societies and chapters of the Association.

Indiana — Advice from the Bulletin of the Indiana Society of Architects:

(Continued on page 210)

WILLIAM S. BROWN, of the firm of Skidmore, Owings & Merrill, nationally known architects and designers of many of America's outstanding buildings. Mr. Brown was architect in charge of the famous Terrace Plaza Hotel in Cincinnati, where the architects with the owner's mandate had complete charge of all materials, equipment and furnishings that went into the hotel. Mohawk laid 11.5 miles of carpet in the Terrace Plaza.

Mr. Brown has, in speaking of Mohawk Carpets, remarked that he has had most satisfactory results from Mohawk Carpets and that in his experience they have met the requirements of the owners. The understanding and cooperation on the part of the Contract Department of Mohawk has been helpful in his planning. Samples, information on colors and styles, and reliance on their agents while the job is under way have been useful factors in their service.

"In the Terrace Plaza Hotel in Cincinnati, for example, practical considerations such as wear and durability of the floor covering were of utmost importance; and carpet pattern and color helped create the comfortable and pleasant interiors in many of the rooms."

Mohawk

MOHAWK CARPET MILLS, INC., 295 FIFTH AVENUE, NEW YORK, N. Y.

THE RECORD REPORTS

(*Continued from page 208*)

"The most important part of architecture is following up the design placed on paper. Once architects did this. How . . . does a bricklayer from the south side of Chicago know or recognize the 'message' hidden in the blueprints of an architect of the contemporary Cliché period? Uninstructed, how does he know how to give you 'floating ceilings free to extend beyond walls to echo into outer space'?

"If you do not watch a mechanic on a job of yours he will always contrive an artistic expression of his own, bearing small resemblance to your inspired intention. Furthermore, if you are an architect at all . . . why don't you have guts enough to tear out a piece of work and have it replaced by a reasonable facsimile of your own thinking on the subject? . . .

"Are not your specs mighty enough? . . . Maybe some of your specs are copied from old specs of an architect who used to run his own job and not be run off it."

Pittsburgh — Beginning its 59th year, the chapter reelected Rody Patterson as president. B. Kenneth Johnstone was named vice president; Charles S. Ingham, secretary; Frank E. Wehrle, treasurer. Builder Edward Wehr — one of the few American builders with a degree in architecture — was elected to honorary membership in the chapter.

Southern California — Officers elected to serve for 1950 are: John Rex, president; John Landon, vice president; Edla Muir, secretary; Charles E. Fry, treasurer; Paul O. Davis, Walter O. Hagedohm, Albert C. Martin Jr., Henry L. Wright, directors.

Shafts of refracted light attained by the use of Structural Corrugated Glass dramatize the entrance to Beloit College Field House, Beloit, Wisconsin.* Note how the bright, vertical lines accent height, lend stature and dignity, increase the apparent size of the structure. Transmitted light gives the modern architect another dimension . . . broader scope for his talents. For exteriors of weather-defying beauty and interiors high in interest, specify Mississippi Structural Corrugated Glass.

Obscure glass by Mississippi is available in a wide variety of patterns and light transmission characteristics to meet architectural or structural requirements in any location or exposure.

For further data see Sweets' Architectural File or contact your nearby distributor of quality glass. Samples on request.

*W. Fred Dalke, Architect; Maurice Webster, Associate Architect; Cunningham Bros., General Contractor.

Send for booklet "Structural Corrugated & Structuralite Glass by Mississippi."

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EXHIBITIONS

British Industries Fair Scheduled May 8–May 19

The dollar shortage is still acute — and Britain's manufacturers will display their wares next month at the British Industries Fair from May 8 to May 19 at Earl's Court and Olympia, London, and Castle Bromwich, Birmingham.

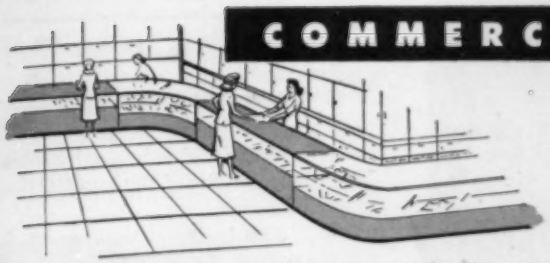
Editor Ian Leslie of "The Builder" of London reports that visitors to the building section at Castle Bromwich will find manufacturers have devoted increased attention to good design, and that this trend will be especially notable in kitchen sinks, cupboards, heating elements, cooking and hot water plants.

Constructional plant on view at Castle Bromwich will reflect the "almost universal" importance — says Mr. Leslie — attached to the use of mechanical devices to save time on processes previously done by hand, especially carrying and hoisting.

New machines of a mobile kind are increasingly used in British construction, and motor-driven barrows, hoists, winches among the displays will show this trend. Some of these machines are dual-purpose, as, for example, the mechanical shovel which has a brick stacker attachment consisting of an extension with fork arm to carry a stillage holding 100 bricks. This may be attached to the side arms without removing the scoop. In addition to serving as an excavator, the machine can be used to transport bricks from the stack and unload them onto scaffolding up to a

(*Continued on page 212*)

COMMERCIAL



Handsome *Consoweld* sets the scene for greater merchandise movement in commercial establishments. Interior design possibilities with colorful *Consoweld* are almost limitless.

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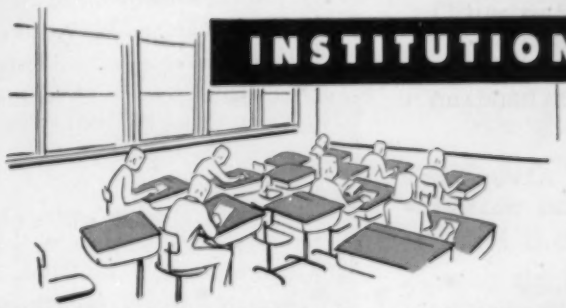

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5. Avoid using thinners excessively.
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7. Protect your lights from condensation until glazing material is set and painted.
8. Do not let sash frames be jarred or handled until glazing material has set.
9. After putty is set (about 14 days) always have it painted immediately! We recommend painting compounds, too.

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THE RECORD REPORTS

(*Continued from page 210*)

height of 16 ft at the rate of 3000 per hr.

Other new machines include light builders' hoists of high mobility which can be easily demounted for erection elsewhere.

Fixtures and equipment for houses and all types of buildings will also be on display.

A wide range of machinery for woodworking purposes will also be seen. Typical of this group will be a "universal" woodworker which comprises in one machine a saw-bench, planer and jointer, thicknesser, moulder, mortiser, borer and tenoner.

Among constructional developments of note will be the "Kwikform" system of unit-framed scaffolding for barrel-vault shuttering; this includes a suspended formwork and vertical shuttering which reduces to a minimum bird-cage scaffolding, is adaptable to any radius and gives a perfect soffit.

Intarsia Featured in Craftsmen's Exhibit

Modern marquetry by Howard Whipple of California and Andrew Szoeke of New York was featured in an exhibition of the American Craftsmen's Educational Council in their gallery at America House, 32 E. 52nd St., New York City, last month.

Mr. Whipple is a retired banker who developed a hobby into a fine art to gain a national reputation. The collection of his work shown included 37 pieces, cut from multi-hued wood, fitted together and combined much as a jeweler treats his stones.

Mr. Szoeke, designer and cabinetmaker, was known when he first came to this country from Vienna in 1921 as a specialist in calligraphy. A group of his designs for modern furniture of inlaid wood was shown at the exhibit.

Home Furnishings Show at Philadelphia Art Center

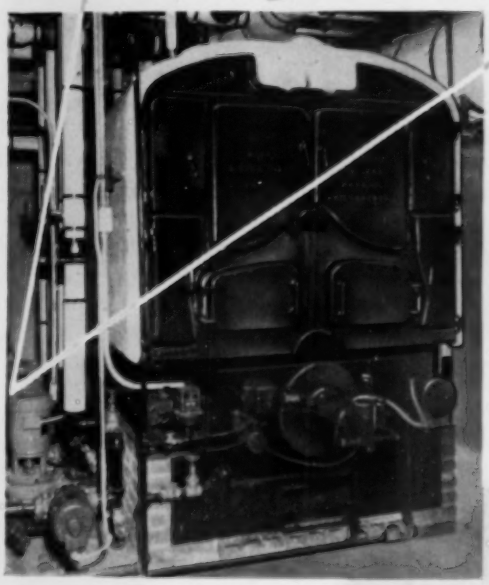
"Inside 1950," an exhibition designed to acquaint Philadelphians with the best in contemporary home furnishings, will open at the Philadelphia Art Alliance, 251 S. 18th St., Philadelphia, on April 24 and continue through June 4.

Visitors will be permitted to test and touch all items in the exhibition, which will be presented as a four-room apartment typical of Philadelphia.

(*Continued on page 214*)

New Elementary School at Burlington, Conn., one of the five outstanding schools featured in the *Architectural Record* Study, is equipped with *one* No. 440 Smith-Mills Water Tube Boiler, fired with No. 3 Oil. Please notice (1) the one-story construction; (2) large area fenestration; (3) small space needed for boiler room.

Architects: Moore & Salisbury, Hartford, Conn.; *Heating Engineer:* H. B. VanZelm, Hartford, Conn. Boiler installation by Standard Cycle Co., Winsted, Conn.



Modern School Designers find Smith-Mills Boilers

Ready

. . . Ready to meet the special heating problems involved in one-floor arrangement and large window areas . . . Ready for the new developments in radiant heating. And more than all, ready for those fundamental requirements: fuel economy, low maintenance and ability to expand as the needs of the school grow.

You need a heating system that has already proved itself in school heating. The basic principle of vertical cast iron boiler tubes, originated and developed by The H. B. Smith Company, insures maximum heat transfer — the use and *re-use* of every bit of heat from the fuel, oil or coal, to create steam or hot water. Now add the fact that a Smith-Mills boiler is assembled on the job — can be increased in size (or made smaller) without extensive alteration; is self-cleaning, and lasts many years (lots are over 50 years old!) — and you can see why architects and engineers specify Smith-Mills boilers with confidence for the important task of keeping kids warm!

Transfiguration School, Tarrytown, New York; another *Architectural Record* selection characterized by one-story layout and ample daylight. One No. 440 Smith-Mills Boiler fired by horizontal rotary burner, provides ample heat for today's needs — promises to grow as the school grows.

Architect: Robert A. Green, Tarrytown, N. Y.; *Heating Contractor:* Hauxwell & Smith, Inc., Port Chester, N. Y.

H.B. Smith

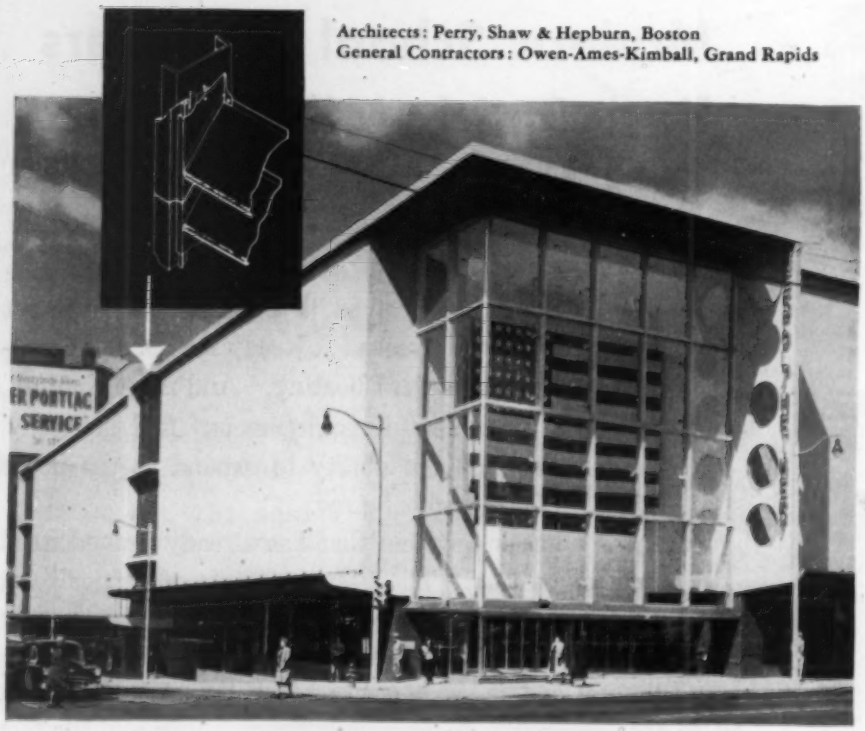
CAST-IRON BOILERS

THE H. B. SMITH COMPANY, INC., WESTFIELD, MASS.

Grand Rapids' magnificent new store takes pride in its significant details of Seaporcel*

Practical beauty *where it counts* is Seaporcel's contribution to this impressive temple of business, designed by Mr. George L. Ely, of Allied Stores, Boston.
For the distinctive sign facia and the modern-as-tomorrow louvres on both sides of the structure, the choice was Seaporcel Architectural Porcelain Enamel, unsurpassed for beauty of appearance - low installation and maintenance cost - permanence - resistance to weather - and the integrity of its manufacturer.

Architects: Perry, Shaw & Hepburn, Boston
General Contractors: Owen-Ames-Kimball, Grand Rapids



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THE RECORD REPORTS

(*Continued from page 212*)

Lott-Neagle Design Associates of Philadelphia have worked with the Crafts and Industrial Design Committees of the Art Alliance to make the showing, an innovation for Philadelphia, possible.

PANERO GROUP WORKS ON PROTECTIVE CONSTRUCTION

A special group of engineers has been organized by the engineering firm of Guy B. Panero to work on problems of protective construction for strategic industrial plants. Considerable attention will be devoted to cost aspects.

Mr. Panero has disclosed that his firm has had inquiries from several large firms interested in obtaining reasonable protection at existing plants where process and ground limitations will not enable them to spread out their buildings and where constructing a complete plant underground is not feasible.

Mr. Panero believes that national defense now requires that at least a part of the total spent annually on new plants be invested in protective construction.

Specially developed construction and planning techniques designed to give optimum protection to the most critical portions of a single plant are a part of protective construction as described by Mr. Panero, whose firm last year completed a major study for the government on feasibility of underground construction.

"It is not practical or desirable to place all, or even a major segment of important manufacturing facilities such as atomic plants underground," Mr. Panero says. "Nor would it be economically feasible to disperse some types of industry. But the time is opportune to consider 'protective construction' for those production facilities which are absolutely necessary to the defense of this nation. Sites must be selected and structures must be designed to offer the maximum degree of protection consistent with economic aspects of our industrial complex."

Mr. Panero cites a report recently released by the Atomic Energy Commission and the Department of Defense which revealed that 320,000,000 sq ft of floor space available in existing mines

(*Continued on page 216*)

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The Four-Sectional, All-Steel, Overhead Residential Garage Door*

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The New MORRISON Roly-Door Four-Sectional All-Steel Overhead Residential Garage Door is the first and the only Residential OVERHEAD DOOR in the world with *every* wanted feature! It has everything — and it's the only overhead residential garage door that has everything!

A New Low Price for a Quality Door!

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Because of its exclusive method of manufacture, the MORRISON Four-Sectional, All-Steel Residential Garage DOOR can be *sold and installed for as low as any four-sectional garage door on the market!*

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The MORRISON Roly-Door needs Minimum Field Assembly!
Everything that can be predetermined is fixed to the door at the factory! All brackets and hinging are permanently welded or riveted! Easier to install—in less time!

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The MORRISON Roly-Door conforms to all building code specifications . . . Because it operates completely within garage, it does not operate through the jambs. Installation is self-contained; settling, shifting, sagging, or out-of-square building conditions cannot interfere with its "TOUCH 'N' GO" operation. It requires no air rights (it can be installed on lot line openings), and it conforms to nation-wide building code specifications.

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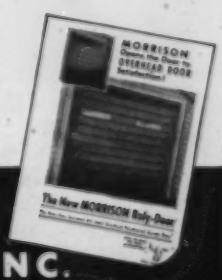

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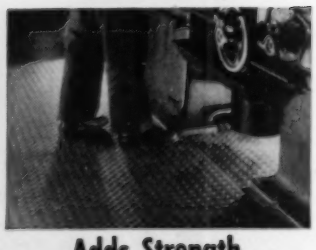

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THE RECORD REPORTS

(*Continued from page 214*)

could be converted into first-class production areas at a cost only slightly higher than conventional above-ground buildings.

The Panero firm, in a $400,000 survey conducted for the Corps of Engineers, Department of the Army, actually designed three different types of plants for location in underground sites, and comparative cost studies were made with similar conventional structures. The plants designed included a precision manufacturing plant, a chemical plant and a storage depot. They have not been constructed.

12 STUDENTS COMPETING IN LLOYD WARREN FINALS

Twelve students, four of them from Princeton University, were selected to compete in the final exercise of the 1950 Lloyd Warren Scholarship, the 37th Paris Prize in Architecture.

The winner, who will receive $5000 for architectural study and travel over an 18-month period, will be announced this month.

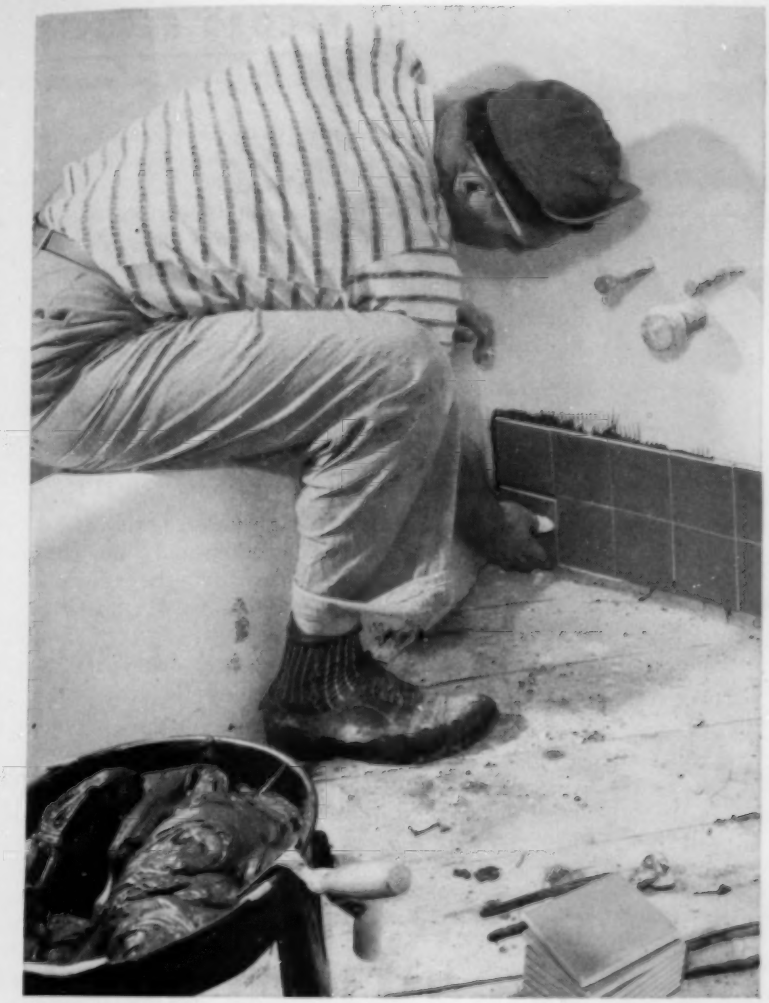
Subject of the second preliminary exercise, on the results of which choice of the finalists was based, was "an oil town." The competition is held under the direction of the Committee on Scholarships of the Beaux-Arts Institute of Design. Finalists chosen were: Charles H. Boney and G. Lee Everidge, North Carolina State College; John J. Mooney, Pennsylvania State College; Maxwell G. Mayo, H. Bryce Roberts, D. M. Simmons and W. H. Sippel Jr., Princeton University; Paul H. Graven Jr., Oklahoma Agricultural and Mechanical College; William J. Scheidementel, University of Illinois, Urbana; Harry Kale and William Murtagh, University of Pennsylvania; and Haigh Josgochian, Virginia Polytechnic Institute.

L. Bancel LaFarge is chairman of the Jury of Award, which includes Gordon Bunshaft, Alonzo W. Clark III, Harmon H. Goldstone, Michael M. Hattis and Benjamin Lane Smith.

FEDERATION ENDORSED BY ENGINEERS JOINT COUNCIL

Proposals made at the first Pan-American Engineering Congress held in Rio de Janeiro last July for an inter-American engineering organization have

(*Continued on page 218*)



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They're doing it with a new product which almost amounts to a new method—a product you as a progressive wholesaler, constantly seeking ways to make sales greater and customer service better, should investigate. It's a new type, rubber-base adhesive.

In remodeling, this waterproof, always resilient adhesive requires no major alterations to existing walls such as are required if mortar is used.

On new construction, this ready-mixed adhesive may even be used over dry-wall construction materials.

This adhesive is cleaner than mortar; there's no splattering to stain or dirty porcelain or chrome. Faster than mortar; tile are floated on. This adhesive contains no water, makes cold weather applications simpler.

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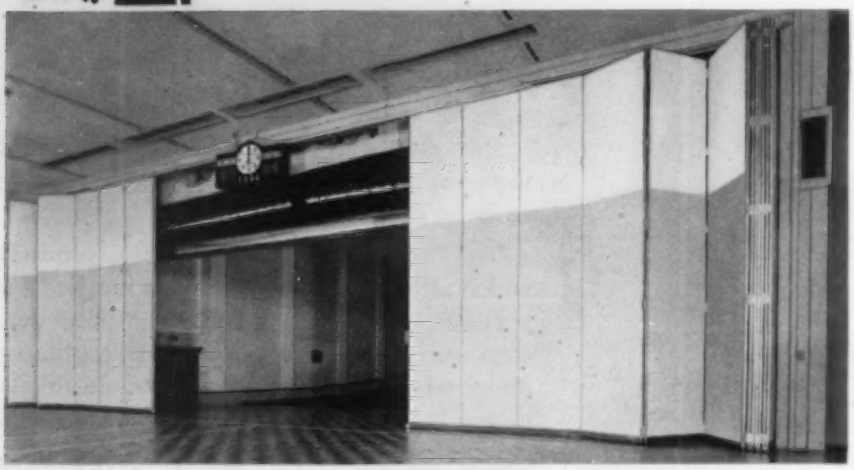
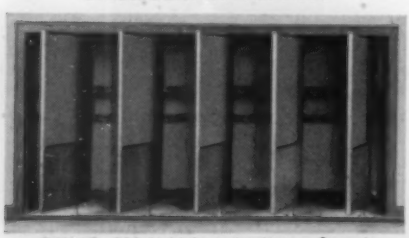


R-W DeLuxe FoldeR-Way Partition, bi-parting, 64′ x 22′ opening.

Just a turn of the switch key and the R-W DeLuxe FoldeR-Way Partition goes into operation silently and swiftly . . . locking and unlocking, opening and closing automatically! Designed specifically for school gymnasiums, auditoriums, stages and other high or wide openings—no matter how large—to be closed against light and sound, electrically operated FoldeR-Way Partitions are the answer to present-day problems of economy in space and expenditure. They transform any large indoor area into two smaller ones—a quick change made entirely without manual effort.

Yes, you turn the switch key and R-W does the rest! DeLuxe FoldeR-Way locks to the floor without floor bolts, keepers, guides, tracks or manually operated sealing strips, pressure-sealing itself to the floor for complete soundproofing. When bi-parting partitions are installed, both halves are synchronized to operate simultaneously—all sections are full-size, equal width doors folding in accordion fashion into jamb or pocket.

R-W Offers a Complete Line of Single and Multiple Action Classroom Wardrobes



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Richards-Wilcox Classroom Wardrobes are outstandingly popular because they are designed to give maximum space for pupils' wraps without overcrowding—because simplicity of design and installation in wall recess means low cost. Wardrobes are available in Single or Multiple Action-Master Control Door units with mounted slate or cork boards. Each door opening accommodates eight to ten pupils.

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THE RECORD REPORTS

(*Continued from page 216*)

been approved by the Committee on International Relations of the Engineers Joint Council.

Participation of United States engineering societies with those of other American nations in an organization meeting in Havana is thus assured. Date of the meeting, which will launch the new organization, will be announced later.

GRANTS OF $42,500 MADE BY ENGINEERING GROUP

Grants of $42,500 were made by Engineering Foundation to 12 projects in fundamental research in the engineering sciences and to two projects in advancing the engineering profession during the fiscal year ending Sept. 30, 1949, the Foundation's recently published annual report showed.

The report stated that Foundation sponsorship and grants had stimulated contributions by industry and universities to these projects of $642,800.

Also included in the report is a summary of the Foundation's work since it was established 35 years ago as the joint research activity of the American Society of Civil Engineers, American Institute of Mining and Metallurgical Engineers, American Society of Mechanical Engineers and American Institute of Electrical Engineers.

The summary showed $9,888,330 had been spent during the 35-year period to advance engineering science and education.

STORY OF BLUEPRINTS DRAMATIZED IN FILM

"The Print before the Product" is the title of a new film which offers buyers of prints a chance to find out what the commercial blueprinter has to contend with when he's told to "make that fast!"

The film, which is available for showing to professional or company groups, shows actual shop practice, with scenes taken right in the blueprint and photocopy departments.

The 16 mm. color-sound film, with a running time of 35 minutes, was made by Western Blue Print Co., Kansas City, Mo., and edited by the Calvin Co. of Kansas City, industrial film producers, who also added musical back-

(*Continued on page 220*)

Today's Better Schools Are Built of WOOD

. . . For economy, durability, beauty, flexibility

SPECIFY:

WEST COAST WOODS

Douglas Fir • West Coast Hemlock
Western Red Cedar • Sitka Spruce

NO OTHER BUILDING MATERIAL GIVES *ALL* THESE *PROVED* ADVANTAGES

ECONOMY. Over-all economy is designed into schoolhouse construction plans when wood is specified. As a building material wood is time-tested, easy to obtain, easy to work.

DURABILITY. Many wooden structures, as old as the nation, are still in use. Buildings have a long life expectancy when built of West Coast Woods. With today's rapidly changing educational requirements, the lumber in a school of wood will be in sound condition long after the building design itself may have become obsolete.

PRACTICABILITY. West Coast Woods are adaptable to every architectural style, allow for individuality of plan and design. Craftsmen in every community know how to take advantage of wood's workability.

BEAUTY. West Coast Woods, rich in natural beauty, give school buildings warmth and friendliness. Pleasing decorative effects may be obtained by using natural grain finishes or any desired color scheme.

FLEXIBILITY. Schools built of wood may be remodeled—or rooms added—at minimum cost without undue loss of time.

SEND FOR *FREE* BOOKLET

Beautifully illustrated in four colors, this new booklet points out many different applications of wood in schoolhouse construction. It tells how schools of wood meet today's educational needs and at the same time give more for the building dollar. The booklet will be ready for distribution about May 1. Reserve your copy now. Use coupon below.

Four of the World's Finest Woods—Specify Them by Name

WEST COAST WOODS } Douglas Fir, West Coast Hemlock, Western Red Cedar, Sitka Spruce

Quality Lumber Produced by Member Mills

WEST COAST LUMBERMEN'S ASSOCIATION

West Coast Lumbermen's Association Room No. 825
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Portland 5, Oregon

Please send me a copy of your free booklet "Today's Better Schools Are Built of Wood" when it is available.

Name_____

Address_____

City_____ Zone_____

State_____

(*Continued from page 218*)

ground and supervised narration.

Inquiries should be addressed to: International Association of Blue Print and Allied Industries, 506 S. Wabash Ave., Chicago 5, Ill.

INTERNATIONAL TRADE FAIR SCHEDULED IN CHICAGO

The first international exposition for industry and commerce ever held in this country will be staged in Chicago August 7–19.

Purpose of the First United States International Trade Fair is to provide an economical and productive medium for sellers of the world's goods to open the American market. American manufacturers also are participating and foreign buyers will be on hand.

A ratio of one-third American exhibitors to two-thirds exhibitors from the rest of the world has been set by Fair officials. Exhibits will be grouped, not by national origin, but by 29 categories of products which have been established.

Four halls — Navy Pier, International Amphitheatre, Coliseum and Arena — will house the Fair, which is expected to be the largest trade show ever held in this country. Fair headquarters is the Merchandise Mart.

The Ninth of a Series in the interest of more efficient use of steel . . . a vital American resource

LACLEDE MULTI-RIB

REINFORCING BARS

NOW . . . Available by Number in Standard Sizes of New A.S.T.M. Serial Designation A305-49 Table I

Thanks to A. S. T. M. specification A305-49, designers now have a more efficient bar for concrete reinforcement . . . one that provides **increased anchorage** which when properly used will give appreciable **savings in steel and concrete.** Advanced design Laclede Multi-Rib Reinforcing Bars exceed the A305-49 specification. They are available in uniform round sections in all standard sizes and can now be ordered by number.

TABLE I A.S.T.M. SERIAL DESIGNATION A305-49

Dimensional Requirements for Deformed Steel Bars for Concrete Reinforcement

		NOMINAL DIMENSIONS ROUND SECTIONS			REQUIREMENTS OF DEFORMATIONS		
Bar No. °	Unit Wt. Lbs./Ft.	Diameter-Inches Decimal	Cross Sectional Area Sq. Inches	Perimeter	Max. Avg. Spacing Inches	Min. Height Inches	Max. Gap. Inches ‡
3	0.376	.375	0.11	1.178	0.262	0.015	0.143
4	0.668	.500	0.20	1.571	0.350	0.020	0.191
5	1.043	.625	0.31	1.963	0.437	0.028	0.239
6	1.502	.750	0.44	2.356	0.525	0.038	0.286
7	2.044	.875	0.60	2.749	0.612	0.044	0.334
8	2.670	1.000	0.79	3.142	0.700	0.050	0.383
9*	3.400	1.128	1.00	3.544	0.790	0.056	0.431
10*	4.303	1.270	1.27	3.990	0.889	0.064	0.487
11*	5.313	1.410	1.56	4.430	0.987	0.071	0.540

*These sections have the same weight and area as bars formerly known as 1" Sq., 1⅛" Sq. and 1¼" Sq.

‡Chord of 12½% of Nom. Perimeter.

°Bar numbers are based on number of ⅛" included in the nominal diameter of the bar section.

— *Write us* —

About specifing **LACLEDE MULTI-RIB BARS** *on your jobs*

LACLEDE

Producers of Construction Steel

LACLEDE STEEL COMPANY

St. Louis, Mo.

ENGINEERING INDEX FOR EIGHT CITIES COMPLETE

National Association of Engineering Companies has announced completion of its index of engineering services available in eight cities across the country.

The index, which is cross-referenced for type of engineering service and geographic location, now covers Detroit, Cleveland, Cincinnati, Providence (R. I.), Salt Lake City, Reading, Grand Rapids and Roanoke.

A state-by-state survey is being conducted by questionnaire. Inquiries should be addressed to: National Association of Engineering Companies, 1601–13 Dime Building, Detroit 26, Mich.

"CITÉ DES ARTS" PLANNED FOR RIGHT BANK IN PARIS

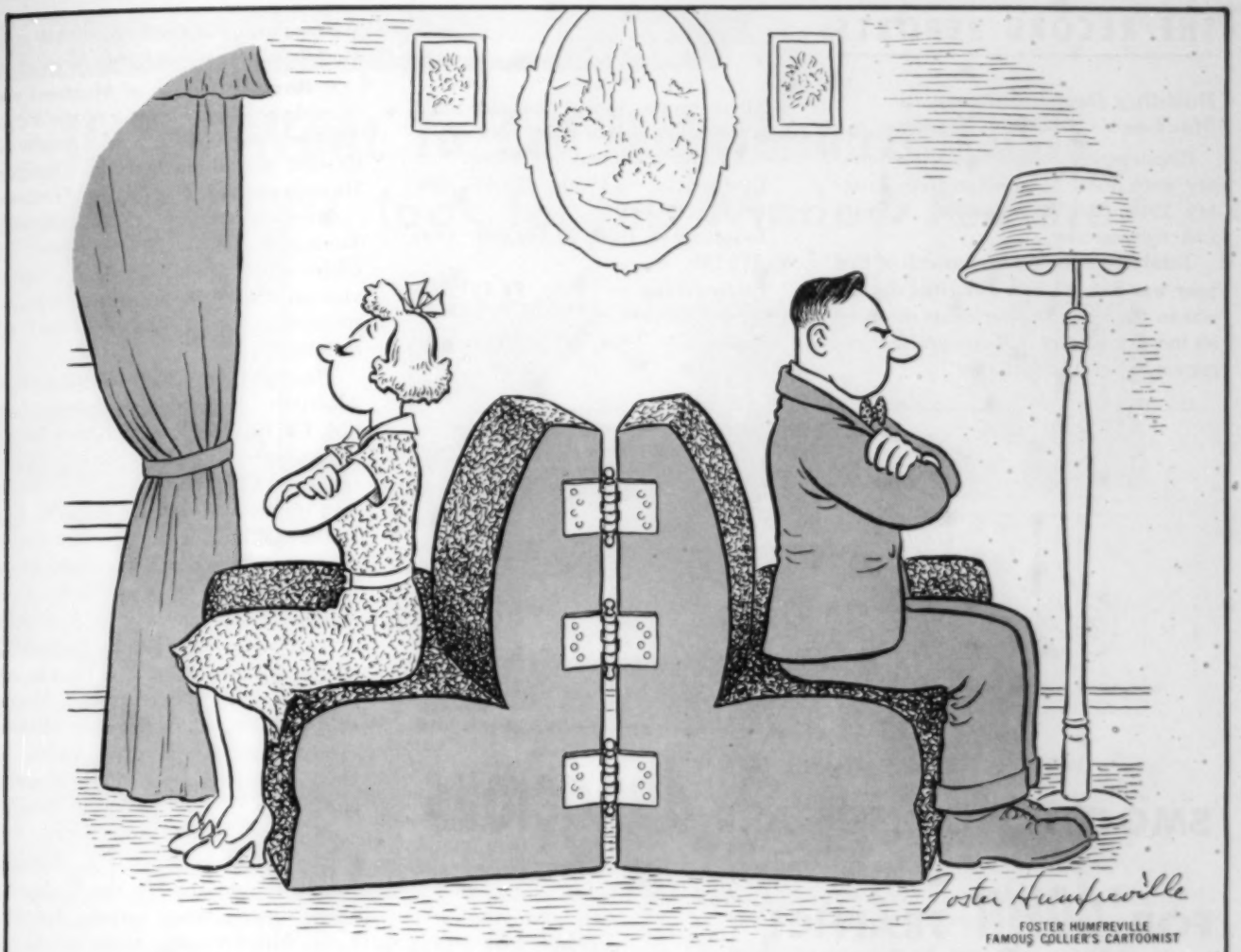
One of the oldest sections of Paris, near the Hôtel de Ville, will soon have studios and living quarters for 200 French and foreign artists in a "Cité des Arts" similar to the Left-Bank Cité Universitaire.

The old Hôtel d'Aumont, built by Le Vau and altered by Mansart, will be restored by Architect Michel Roux-Spitz to serve as the Cité's center, with a restaurant, lecture rooms, and an entrance on the Seine's bank.

Painters will be assigned studios with northern exposure; sculptors studios on the ground floor; and musicians soundproof practice rooms. A bathroom or shower, a hot plate, a telephone and a heater will be provided with each room.

ERRATUM

The RECORD regrets that an article on page 12 of the January issue incorrectly described Architect Eric Stengade as designer of the Danish Pavilion at the New York World's Fair of 1939. Mr. Stengade was assistant to Tyge Hvass, the architect for the pavilion.



FOSTER HUMFREVILLE
FAMOUS COLLIER'S CARTOONIST

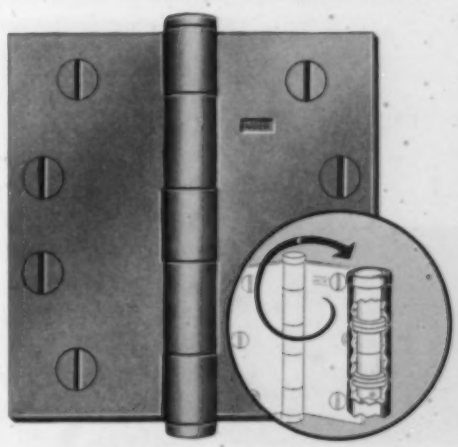
Everything Hinges on Hager!

BRASS BEAUTY *and* STEEL STRENGTH!

Hager combines the glistening elegance of luxurious solid brass with the timeless strength of steel (at the critical point of knuckle joint wear) to reinforce permanent beauty with *long life performance!*

Door weight swings on case-hardened, cadmium plated steel bushings, extending the *full length* of each knuckle. These hardened steel bushings—*steel-against-steel*—actually support door weight . . . leave brass knuckles free from errosive joint wear and friction. Beveled leaves insure close-fitting joints. Trim, square outer edges are firmly milled sharp and clean. Steel Pin with Brass Tip.

Specify Hager Solid Brass Steel-Bushed Butts for average frequency residence doors calling for finest service and enduring beauty.



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BRASS BUTTON TIP BUTT, STEEL BUSHED
Solid Brass Rust-Resisting Beauty
Hardened Steel-Bushed Knuckle Strength

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FOUNDED 1849 — EVERY HAGER HINGE SWINGS ON 100 YEARS OF EXPERIENCE

THE RECORD REPORTS

CANADA *(Continued from page 16)*

Building Decline Shown in MacLean's January Figures

Construction contracts during January were down $16 million from January 1949, MacLean Building Reports Ltd. figures show.

Total figure for the first month of this year was $56,685,800. Principal decline was in the west; Quebec alone recorded an increase of $1.8 million over the corresponding month last year.

All categories except business building were off. Comparative January figures for four classifications follow:

Residential — 1950, $24,032,000; 1949, $30,299,400.

Industrial — 1950, $3,161,600; 1949, $9,170,200.

Engineering — 1950, $4,491,100; 1949, $15,139,300.

Business — 1950, $25,001,100; 1949, $18,183,500.

SMOOTH NOSINGS ARE dangerous FOR down TRAFFIC!

Specify FERALUN*—the safety tread with abrasive IN THE NOSING SURFACE

As the illustrations show, DOWN traffic needs the underfoot "grip" of abrasive particles embedded in tread nosings, to prevent slipping and wear. UP traffic needs the same safety features.

Feralun treads are made to provide full protection from this "double traffic" all stairways must serve. They always have abrasive granules in the nosings —for the *down* traffic, and should be wide enough (at least 4") to protect the *up* traffic as well. *Note action photos showing points of foot contact which are also points of slipping and wear.*

Not only do these sturdy cast iron abrasive treads give underfoot safety *up* and *down*, but they also give protection from wear as well. Installations of Feralun treads are still giving maintenance-free safety after more than a quarter century of continuous use.

For full information on Feralun and other underfoot safety products, see Sweet's File, Architectural, Sec. 13a/10, or write to:

AMERICAN ABRASIVE METALS CO.

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*Reg. U. S. Pat. Off.

USE FERALUN TREADS AND BE SAFE . . . "DOWN AND UP"

J. Roxburgh Smith Elected R.A.I.C. President for '50

J. Roxburgh Smith of Montreal was elected president for 1950 of the Royal Architectural Institute of Canada at its 43rd annual assembly in Winnipeg. He succeeds A. J. Hazelgrove of Ottawa.

Other officers are: H. H. Simmonds, Vancouver, first vice president; H. Claire Mott, Saint John, N. B., second vice president; R. S. Morris, Toronto, treasurer; Harold Lawson, Montreal, secretary.

The Institute's 1950 Council will be: Alberta — T. Gordon Aberdeen, Gordon K. Wynn, Cecil Burgess; British Columbia — S. Patrick Birley, W. F. Gardiner, H. H. Simmonds, F. L. Townley; Manitoba — D. H. Carter, G. Leslie Russell, Prof. R. Sellors; New Brunswick — R. Duschenes, H. Claire Mott; Newfoundland — F. Coubourne, J. E. Hoskins; Nova Scotia — C. A. Fowler, A. E. Priest; Ontario — C. Lenz, V. J. Blackwell, J. H. Craig, A. J. Hazelgrove, D. E. Kertland, R. Schofield Morris, W. Bruce Riddell, L. E. Shore, Harland Steele; Quebec — L. N. Audet, C. David, Harold Lawson, J. C. Meadowcroft, A. J. C. Paine, Maurice Payette, J. Roxburgh Smith, Emile Venne; Saskatchewan, D. H. Stock, J. C. Webster.

Fellows admitted to the College of Fellows were James Govan, Toronto; J. C. Meadowcroft, Montreal; G. C. Nairne, Vancouver; J. Morrow Oxley, Toronto; and Prof. John A. Russell, Winnipeg.

Kiyoschi Izemi, 28-year-old Canadian-Japanese graduate in architecture of Manitoba University was awarded the R.A.I.C.'s $1500 scholarship. Mr. Izemi has had an outstanding record in architecture and will use the scholarship for travel in the United States and study at Massachusetts Institute of Technology.

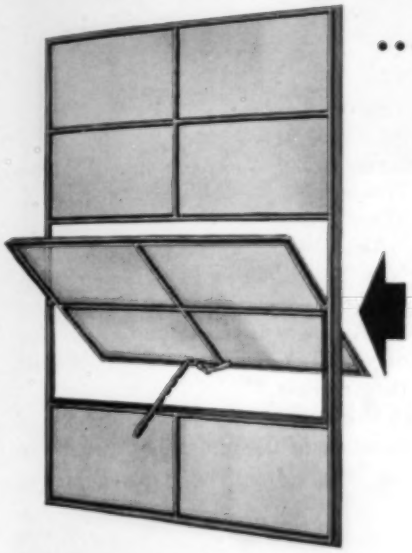
(Continued on page 226)

Mathers & Haldenby are architects for the U. S. Consulate General's projected building in Toronto (photo of rendering above). It will have three stories and basement; exteriors, Indiana limestone, granite trim

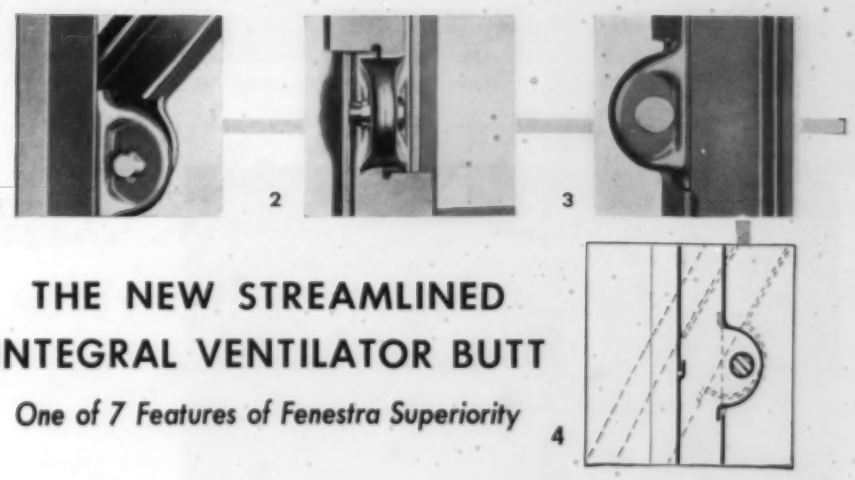
Tips on cutting window costs

If You Want To Cut Maintenance Costs

...look for this Window Feature



New Fenestra Pivoted Window



THE NEW STREAMLINED INTEGRAL VENTILATOR BUTT

One of 7 Features of Fenestra Superiority

Above, you see the new Fenestra* Pivoted Steel Window and 4 views of the exclusive feature that slashes window maintenance . . . the new, streamlined *integral* butt which keeps vents fitting perfectly for complete weather-tightness. (1) Frame side (2) Head-on, inside view (3) Window side (4) Overlapping weathering sections. The butt has no protruding parts open to damage. Cup shape and drawn ribs give it special strength.

Fenestra Pivoted Windows are widely used for extra daylight, fresh air and see-through vision.

With slender lines and extra glass area, all Fenestra Industrial Steel Windows bring in extra daylight . . . reduce accident-tempting shadows. They bring in cool, clean fresh air, no matter what the weather—protecting ventilators guard the openings. They're good looking and rugged, warpproof and firesafe. They can be easily combined vertically or horizontally to form whole walls of windows.

Fenestra Windows cost less in three important ways: *Low first cost:* Standardization of types and sizes permits efficient volume production. *Low installation cost:* Modular sizes provide co-ordination of windows with wall materials. *Low maintenance cost:* Precision fabrication of strong, high-quality materials.

For plants, offices, labs, warehouses, commercial buildings and many others, Fenestra Industrial Steel Windows are your best bet for high quality at remarkably low cost.

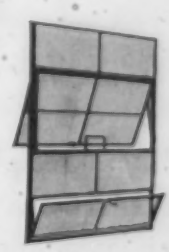
Mail the coupon for types and sizes. Or call your Fenestra Salesman (listed in your Yellow Telephone Directory) . . . Representative of America's oldest and largest Steel Window Manufacturer. *®

7 SAVINGS WITH NEW FENESTRA WINDOWS

1. Butts integral with jamb weathering bars—stronger, fewer parts, lower maintenance.
2. Precision machining of window bars—windows and vents of exact, uniform sizes.
3. Automatic assembly of ventilators—vents fit properly and operate easily.
4. Extended jamb bars—vents always align perfectly.
5. Strong, tight-weathering sections—continuous double contact all around vent opening.
6. Rigid, interlocking muntin joints—rugged construction for low maintenance.
7. Strong hardware attachment—prevents breakage, affords safer locking.

COMMERCIAL PROJECTED WINDOW

Popular for efficient, economical screening or shading—vents do not interfere. Open-out vent serves as a canopy over opening, protecting interior against rain; open-in vent is a built-in windguard, shedding water outside.



Fenestra

WINDOWS • DOORS • PANELS

DETROIT STEEL PRODUCTS CO.
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Detroit 11, Michigan

Please send me information on types and sizes of new Fenestra Industrial Steel Windows.

Name_____

Company_____

Address_____

CANADA *(Continued from page 222)*

In reporting for the 1949 Council, Retiring President A. J. Hazelgrove urged architects to specify and use materials from sterling areas.

"This may involve disruption of some well-regarded connections and disturbance of routine of practice," he said, "but the advantages will be such as to compensate for practical difficulties."

A plan for periodic award of medals for Canadian architecture by the Massey Foundation was announced at the meeting. The scheme, prepared after consultation with the Institute, provides that Massey Medals for Architecture will be awarded first in 1950, then every second or third year, depending on building activity in Canada. Awards will be made at exhibitions sponsored by the R.A.I.C.

Purpose of the awards is to enable the public to recognize outstanding examples of Canadian achievement in the field of architecture and thus encourage members of the profession in their efforts to achieve distinction of design.

Harold Sleeper Addresses Quebec's Annual Meeting

Harold R. Sleeper, F.A.I.A., of New York, was guest speaker at the luncheon which climaxed the 59th annual meeting of the Province of Quebec Association of Architects which convened at the Windsor Hotel in Montreal on January 27 and 28.

Mr. Sleeper, a past president of the New York Chapter, The American Institute of Architects, and chairman of the Advisory Commission on Rezoning of New York, discussed "The Public and the Architect."

More missionary work on the part of members of the profession is needed to get rid of certain public misconceptions regarding architects, Mr. Sleeper suggested:

"The public should know that we can be of help at a small cost in vital matters such as selecting a site, changing plans to fit a site, supervision or minor changes in stock plans."

Comparing architecture to medicine, Mr. Sleeper asked: "What doctor would refuse to bandage a cut finger or prescribe for your stomach upset? He takes the small, uninteresting jobs along with those that are more serious. Can't we do as much?"

Through public relations, Mr. Sleeper stressed, much can be done to give the public a clearer picture of the architect and his work.

Pierre C. Amos of Montreal, newly-elected president of the association, presided at the luncheon.

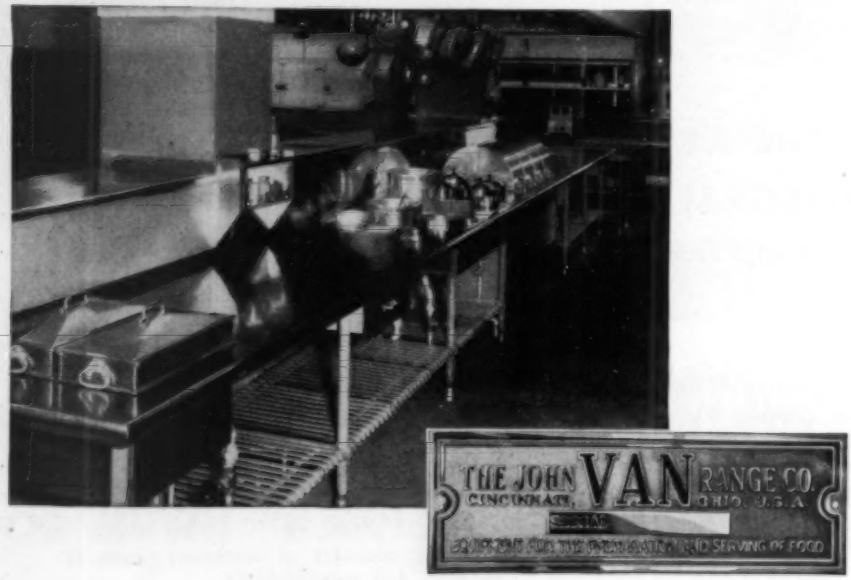
Other officers for 1950 are: H. Ross Wiggs, Montreal, first vice president; Emile Venne, Montreal, second vice president; John Bland, honorary treasurer; Maurice Payette, honorary secretary; J. C. Meadowcroft, Montreal, retiring president.

Members of the Council are: George E. deVarennes, Hugh A. I. Valentine, E. J. Turcotte, Henri Mercier, R. E. Bolton, Patsy Colangelo, Paul Fleury, all of Montreal; Alphonse Belanger, Sherbrooke; Lucien Mainguy, Gerard Venne, Quebec.

American, Canadian Planners Meet in Joint Sessions

Members of the American Institute of Planners and the Institute of Profes-

(Continued on page 228)



at outstanding kitchens you look for Van's mark

● When you see an unusually fine food service installation, you will undoubtedly find Van's name plate on the equipment. It is like the name Sterling on the silver you cherish.

● If you are planning food service equipment improvements, make use of Van's skill and experience. Illustrations of such installations are in Van's Centennial Book of Installations. Write for it.

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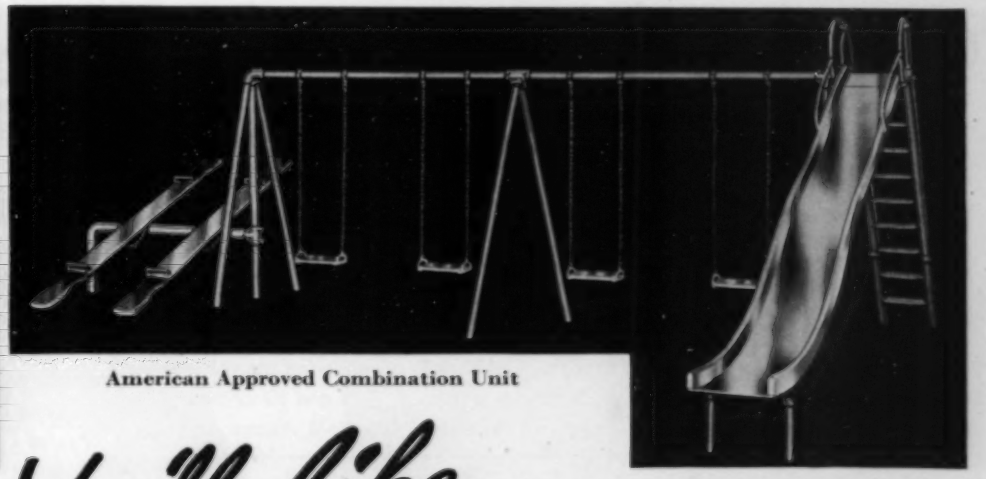

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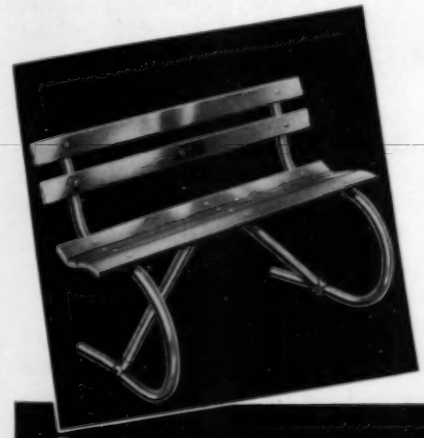

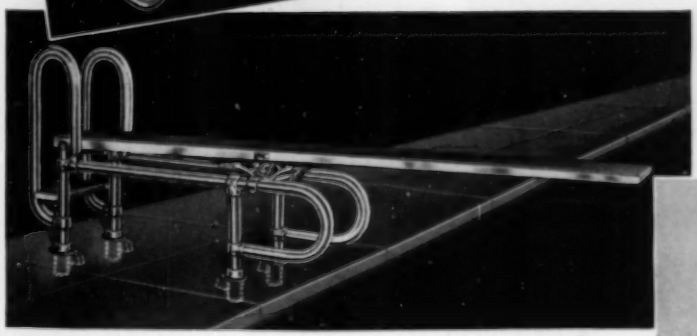

Above: American Streamlined Park Bench
American Official Regulation One-Meter Unit

Because safety and long service are prime factors in your choice of Playground and Swimming Pool Equipment, you naturally want the finest that money can buy. Since 1911, the best Approved Equipment has been built by American in Anderson, employing superior materials and craftsmanship.

You'll like American's low, nationally advertised prices also, which today average but 17% above pre-war, just as you will appreciate our friendly, equitable adjustments and American's *Lifetime Guarantee* against defective construction.

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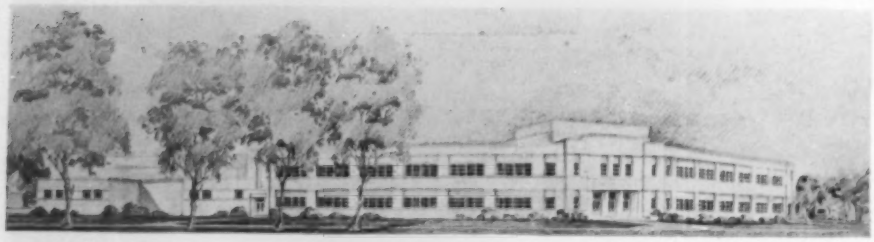
Internationally Specified . . . . . Internationally Approved

CANADA (*Continued from page 226*)



Dalewood Senior Public School at Hamilton, Ont. (photo of rendering above) is one of the first schools built in Canada to accommodate grades 7, 8, 9 and 10, or the intermediate grades. A later addition will house pool. William R. Souter & Assocs., Architects

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Faithful to your client } Terrazzo

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sional Town Planners of Canada raised their voices in friendly discussion at joint sessions held at Niagara Falls, Ontario, March 3–5.

In addition to general meetings, there were panel discussions, luncheons and dinners, with distinguished planning authorities participating. Subjects for the discussions were: "The Consultant and the City Plan — How May His Services Best Be Applied?", "Techniques of New Town Design," "New Trends in Housing and Redevelopment Legislation," and "An Institute Program to Formulate a National Policy and a National Program for Planning."

Speakers included Frederick J. Adams, president of the American Institute of Planners; Miss Catherine Bauer; The Hon. W. Griesinger, Minister of Planning and Development of Ontario; George Prudham, M.P., parliamentary assistant to the Minister of Resources and Development; Hon. C. Girard Davidson, Assistant Secretary of the Interior for the United States; Carl Friedrich, professor of government, Graduate School of Public Administration, Harvard University; W. Phillip Shatts, president, Metropolitan Plan Association Inc., St. Louis, Mo.

D. G. Geiger New Head Of Engineers' Council

D. G. Geiger, representing the American Institute of Electrical Engineers, Canadian District, was elected chairman at the recent annual meeting of the Canadian Council of Professional Engineers and Scientists.

Dr. G. C. Monture, O.B.E., representing the Canadian Institute of Mining and Metallurgy, was elected vice chairman.

L. L. Bolton continues as liaison officer and acting secretary until a decision on scope of future activities is made.

Ontario Architects Name Representative to C.N.E.

Toronto's Mackenzie Waters has been reappointed as representative of the Ontario Association of Architects to the Canadian National Exhibition for 1950.

Mr. Waters is also a member of the C.N.E. Board of Directors.

Study Climatic Factors in Problem of Condensation

Extended research into the building problem caused by Canada's climatic conditions was reported to the 43rd as-

(*Continued on page 230*)

How To Get The Most Out of ANY GYMNASIUM AREA..... with *Universal* Seating

Factual Example:

(GYM DIMENSIONS 140' x 150')

12,790 SQ. FT. MORE USABLE FLOOR SPACE

1,030 MORE REVENUE-PRODUCING SEATS

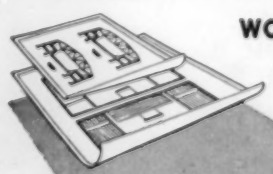
$27,000 LOWER SEATING COSTS

With Universal Stands in folded position, thousands of square feet of extra floor space is made available on each level in 15 minutes.

Universal Stands are installed in sections; may be opened or folded back by sections when and as needed. Exceptionally convenient!

With Universal Stands open, every available square foot outside the basketball floor is converted into revenue-producing seating.

Actual comparisons in a given gym area show these outstanding advantages of modern two-level seating . . . with Universal Folding Stands . . . over old type built-in seating. Total seating capacity can be increased up to 40% . . . yet, in this case, there is also a gain of 12,790 square feet of floor space when stands are folded. On the balcony level alone, ample area is provided for practice wrestling, boxing, corrective physical education, etc. Gains in main floor space result in one or two extra basketball cross-courts plus additional space for physical education and specialized training. *Total seating costs are usually cut in half* . . . and the flexibility of Universal Folding Stands assures easy co-ordination with your plans for roof trusses, exit space, window location, shower and locker room facilities. See *Sweet's Catalog*, section 23-g/2. Additional literature free on request.



WORKING SCALE BLUEPRINTS

of the gymnasium seating plan described are available without cost . . . also complete literature, including comprehensive studies of gymnasium seating by Harold R. Sleeper, F.A.I.A. Use the coupon

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Please send working scale blueprints of two-level gymnasium seating plan described . . . and complete literature on Universal Folding Stands.

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CANADA (*Continued from page 228*)

sembly of the Royal Architectural Institute of Canada by R. F. Legget, director, Division of Building Research, National Research Council.

Mr. Legget noted that the two-year-old division is accenting climatic conditions in its program, which also includes fire research, special problems of building in the North, soils and foundations study, snow and ice research.

Some surveys of houses in operation have been carried out and have revealed serious problems of condensation brought about by improved standards of insulation and construction, he said.

So serious are condensation problems in modern house building that the division arranged for carrying out a special eight-week test in the climatometer of Pennsylvania State College. A small test building insulated in different ways was subjected to severe outside conditions, while normal living conditions were maintained inside, Mr. Legget reported.

This project threw new light on condensation problems and will assist the division in planning its own research facilities in Ottawa. Construction may start early this year.

$20 Million Development Slated for North York

Accommodations for nearly 2000 families will be provided in a $20 million housing and commercial development expected to get under way shortly in North York township, bordering on Toronto.

Included in the project are 1200 homes, apartment buildings containing 500 suites and a shopping centre with 12 acres of stores.

The land, purchased several years ago by Central Mortgage and Housing Corp., is being subdivided by Investors Syndicate of Canada Ltd. and the Great West Life Assurance Co. It is the biggest housing undertaking in the township since the war.

The two companies, in preparing the land for sale to contractors, invested $1 million in public improvements.

Marcel Breuer Visits Toronto

"Where Do We Stand?" was the topic of a recent address given in the Museum Theatre, Toronto, by Marcel Breuer, well-known exponent of contemporary architecture in the United States.

Mr. Breuer's visit to Toronto was sponsored by the Architectural Society of the University of Toronto.

Priorities Office Disbanded

Now that there are few scarcities in building materials, the federal government has announced the closing of its priorities office.

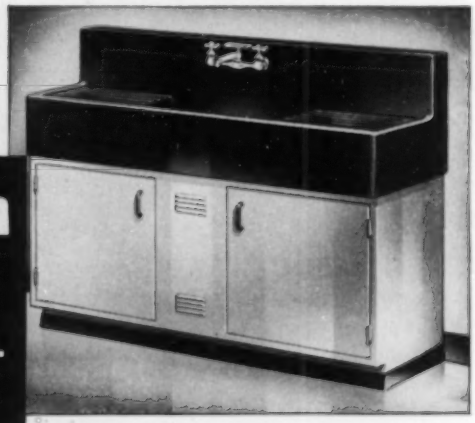
Since 1941 this office has granted priority ratings for construction materials, following a policy favoring veterans and those building dwellings worth $10,000 or less.

The office reached peak activity after the war, and in the past five years okayed priority ratings for about 105,000 houses.

At present there are only a half-dozen scarce building items in Canada: cement and its by-products; brick, in Ontario and Quebec; small-sized nails; steel sheets; plumbing pipe and fixtures.

(*Continued on page 232*)

New! for your laboratory THIS "10 FEATURE SINK" ...at No Extra Cost



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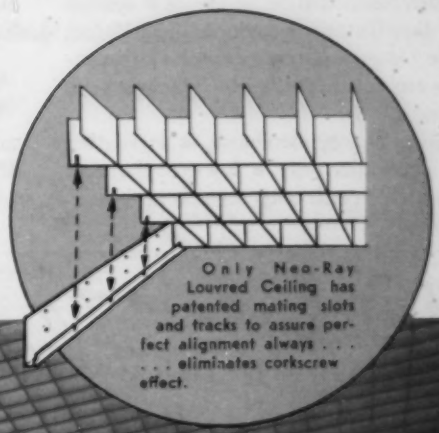
NEO-RAY Scores Again!

Leading Architects Specify Neo-Ray Louvred Ceiling and Mammoth Series for Wallachs Newest Store.

Well-known architects Ketchum, Gina & Sharp select Neo-Ray for the right lighting. In the newest of Wallachs retail chain, they specified Neo-Ray ML-2448 Louvred Ceiling to provide correct lighting for the entrance and windows. This Louvred Ceiling maintains perfect alignment under all conditions. It's adaptable to every type of ceiling and its simple one-man installation is unmatched in the industry.

Selling Areas Maintain 45 F.C.

with Neo-Ray recessed Mammoth #M607 4 x 4 ft. squares and #M605 2 x 4 fixtures.



Only Neo-Ray Louvred Ceiling has patented mating slots and tracks to assure perfect alignment always . . . . . eliminates corkscrew effect.

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Especially designed for large selling areas and other large luxurious spaces

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See our catalogue in Sweet's Architectural File for 1950, Sec. 31a/16

NEO-RAY PRODUCTS, INC.

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CANADA (*Continued from page 230*)

Ontario Acts on Housing

Legislation making racial or religious restrictions in property deeds illegal is under consideration in the new session of the Ontario provincial legislature. The Ontario government plans to outlaw any future deeds which include such clauses.

Also being introduced is legislation to get under way a low-cost housing plan which will offer tenants an opportunity to buy the dwellings they occupy. In the last two years Ontario housing loans of more than $17 million have enabled 15,000 families to buy their homes.

Apprentice System Needs Aid

Contracting firms must show more active interest in the apprentice system, H. C. Nicholls of Toronto told members of the Ontario General Contractors' Association at their annual meeting in Toronto recently.

Bricklayers and plasterers particularly were criticized. As chairman of the Apprenticeship Committee, Mr. Nicholls told of a recent occasion when six boys wished to be apprenticed to bricklaying and he was unable to place them.

The building industry must do everything possible to improve this "fantastic" situation, he said, urging employers to take interest in their apprentices, see that they work with good mechanics, and have the necessary tools.

Edmonton Sets Building Pace

This year promises to be one to remember in the nation's fastest-growing city: Edmonton, Alberta.

According to the *Edmonton Journal*, $65 million in building projects are now under way or pending. And predictions are that by the end of the year, this may reach a whopping $90 million.

What happens to a city when it finds itself in the midst of an oil boom can best be understood by a glance at construction figures: private housing will account for $25 million; retail stores, $5 million; warehouses, commercial and office buildings, $10 million.

Also planned are a $28 million refinery, a $5 million extension to the C.N.R. MacDonald Hotel, a new federal building and other government buildings at $9 million, new schools worth $5 million, and extensions to the University of Alberta.

Protest Obsolete Bylaw

What's the cost of an obsolete plumbing bylaw?

Well, in Toronto it's claimed to amount to $1 million a year. That's the estimate of Alderman Belyea, who points out that Toronto's plumbing bylaws haven't been revised for 30 years and therefore bear no relation to present-day needs. Citizens are forced to spend $1 million each year, he says, for needless work and installations.

Proposed office and warehouse extension for Allcock, Laight & Westwood Co. Ltd., Leaside, Ont. (photo of rendering above) will have structural steel frame, front brick-faced, concrete block side walls. Harry B. Kohl of Toronto is the architect

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with *Dalmo*

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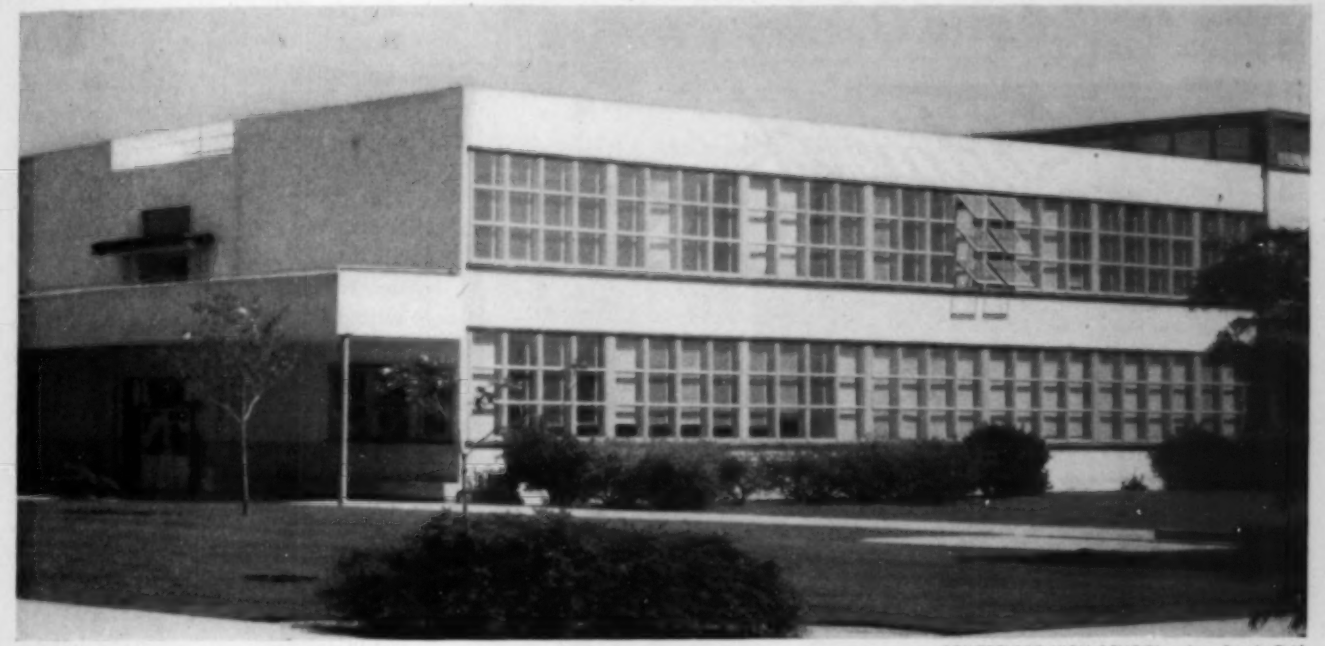
WOOD PROJECTED AWNING TYPE



POLYTECHNIC HIGH SCHOOL — Long Beach, Calif.
HUGH R. DAVIES, *Architect*

VENTILATION • Dalmo Windows give full control of ventilation to the entire area of the window opening. The angle of the open sash directs air currents upwards, eliminating drafts. The air diffuses from the ceiling and circulates evenly through the room. The open sash sheds rain, deflects wind, and allows controlled ventilation under all weather conditions. From 1% to 100% controlled ventilation.

LIGHT • Dalmo Windows allow the use of venetian blinds or ordinary shades. The sash can be operated without disturbing the blind. Ordinary shades may be attached to the sash itself to control daylight illumination and permit uniform light distribution without interfering with ventilation. Shades applied directly to the sash are protected from the weather with a resultant economy of maintenance costs.

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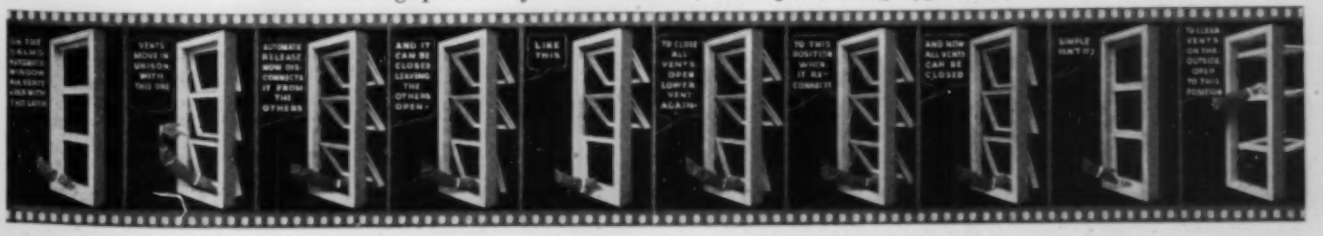
Movie showing operation of Dalmo Automatic Multiple Awning Type Window



NAHB CONVENTION

(*Continued from page 9*)

Architects Attend

Although primarily a builders' convention, it was attended by many architects. Professionals specializing in residential work and community development projects not only were present in large numbers but took part in many of the meetings, which ran in profusion throughout the four-day convention. One of these, entitled "The Architect and Builder Debate Today's and Tomorrow's House Design" was moved from its former "clinic" status to the grand ballroom of the Stevens, where 3000 people could attend. Here a panel of three architects, three builders and several magazine editors exchanged ideas and debated trends in design. If any conclusion could be drawn from this discussion, it was that builders are at last awakening to the possibilities of good modern design and the value of sound professional assistance, but are vastly confused as to what buyers in their communities will accept.

Another panel entitled "Producing Better Custom-Built Homes" surprised convention arrangers by overflowing its allotted space and resolving into an extended debate on the extent of consumer acceptance of modern trends in home design. Architect Walter K. Durham of Philadelphia participated in the panel discussion.

Even the feminine side of the profession of architecture came in for attention at the builders' convention. A national competition for women students in architecture in the United States and Canada was sponsored by the National Association of Home Builders and *American Builder* Magazine, and prize winners received their awards in the opening assembly. Women architectural students representing 31 colleges had submitted entries. The first prize of $500 was awarded to Elizabeth Graham Bell, an advanced student in architecture at Carnegie Institute of Technology; second prize went to Sonia Jean Albert of Yale; and third prize went to three girl students at the University of Illinois, who collaborated in designing what they titled "Sunback House." They were: Nancy Hopkins, Josephine Willrodt and Margaret Sinclair.

Further evidence of builder interest in design, color and texture was indicated by a grand ballroom program presided over by a woman builder, Mrs. Henny Mollgaard, of Milwaukee. Panel talks were devoted to "House Design from a Woman's Viewpoint," "Modern Wallpapers and their Effectiveness," "Proper Lighting for Homes and Gardens" and "What the Right Color Did for 30,000 Homes" — a slide lecture by Color Consultant Beatrice West.

Radiant Heat

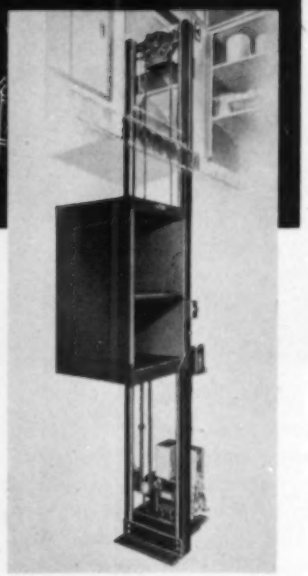
The glittering array of equipment, devices and materials for homes, largest ever assembled, called attention to the change taking place in design and construction. Notable were the large number of new, compact heating units for radiant panel systems and for perimeter systems. Displayed also were new white-jacketed heating plants for location in kitchens or laundries. Other compact units were designed for use in attics, in crawl spaces, under stairs, in closets and between studding in walls.

Other displays showed how home costs may be cut by new products. A lock manufacturer demonstrated in-

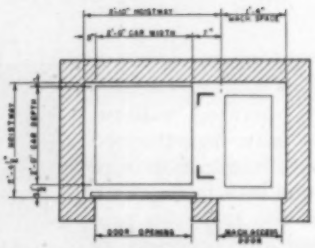
(*Continued on page 236*)

SPECIFY THE *Sedgwick*
ELECTRIC UNDER-COUNTER ROTO-WAITER

for { SAFE / DEPENDABLE / ECONOMICAL
UNDER-COUNTER DUMB WAITER SERVICE



Where space limitations or service needs require an electric dumb waiter installed under a counter . . . in a back bar . . . or in a cabinet — in drug stores, groceries, markets, restaurants, cafeterias, soda fountains — the Sedgwick Under-Counter Roto-Waiter provides the ideal solution. The unique roto-drive principle eliminates the possibility of overtravel and allows every inch of available height to be used safely. The outfit is self-contained, requiring fastening — but no support at the upper floor level. Its compact machine, occupying but a minimum of space in the basement, is placed *at the side* of the equipment, where it is easily accessable for inspection and lubrication — and where it will not be subject to the service disorders so often caused by accumulated dirt, spillage or drainage.



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In addition to the Sedgwick Under-Counter, and regular two-stop Roto-Waiters, Sedgwick also builds Multi-Stop Electric Traction Dumb Waiters for three or more landings — with a wide selection of specially engineered control equipment and signal systems to suit individual needs. Other Sedgwick Dumb Waiters — including both electrically and manually operated types — are likewise available in a wide range of sizes and capacities. Steel towers and enclosures can be supplied where desirable. Specify, too, Sedgwick Steel Dumb Waiter Doors for complete satisfaction.

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Car Travels to One Inch Beneath Underside of Counter . . . Safely!

Plan, shown above, shows standard Under-Counter Roto-Waiter with car 24" x 24", 150 lbs. capacity. Also built specially in greater capacities with cars up to 36" x 36". The height of the car is, of course, dependent on the clear height available under the counter.

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Write for literature and free sample block

NAHB CONVENTION

(*Continued from page 234*)

stallation of his tubular front door unit in 2½ minutes time. An in-wall heating unit that can be installed in 40 minutes was shown. Prefabricated chimneys that cut both time and cost attracted much attention.

Exhibits of windows showed the trend to greater glass area and double glazing. One manufacturer displayed a double glazed unit that is raised and lowered by turning a switch. As the window disappears, a screen takes its place. (Vita Automatic Windows, Inc., New York)

Another manufacturer displayed a window unit consisting of a fixed glass area in a louvered frame. Screened louvers, located above, below or beside the fixed glass area, provide all necessary ventilation, while the glass area admits light and permits vision. Double glazing eliminates the need for storm sash. (Solar Air-Flo, Inc., Elkhart, Ind.)

Also shown was a complete window package consisting of frame, weatherstripping, glass, screen and insulating panels. They are installed with a minimum of labor. Both glass and screen panels are easily removed from the inside. Adding the insulating panel affords double glass protection in cold weather. (F. C. Russell Co., Cleveland, Ohio)

Improvements in kitchen convenience were numerous. A new three-compartment sink was on display. The third compartment, located between two regular bowls, is a covered well which contains a hidden garbage basket. Scraps are disposed of by washing into the basket. (American Radiator & Standard Sanitary Corp., Pittsburgh, Pa.)

Better lighting, step-saving layouts, and easy-to-clean working surfaces were featured in other kitchen displays.

For the modern kitchen-laundry, an appliance manufacturer displayed his new model sink that acts as clothes washer and dishwasher in addition to its regular functions. Thus, the housewife first clears breakfast dishes away in a dishwasher that does full service for six in five minutes. Then she effects a quick change of tubs and does the family wash. The unit not in use is stored in the cabinet below the sink and is mounted on a swinging arm. The entire installation is 60 in. long, 27 in. wide and 36 in. from floor to work surface. (Thor Corp., Chicago, Ill.)

Two separate units, a new electric cooking top and electric oven, can now be built in as part of the kitchen. Designed for complete individuality of kitchen arrangement, these independent units may be mounted on the working level at any height to suit the housewife, and may be located wherever desired, even on opposite sides of the kitchen. A companion appliance, a built-in electric griddle, was also previewed at the exposition. (Thermidor Electrical Mfg. Co., Los Angeles, Calif.)

For flexible storage, prefabricated wood wall closets are rapidly gaining favor. They offer extra storage space at low cost and can be built in as partition walls in new homes or merely added in houses already built. (The Mengel Co., Louisville, Ky.)

Typical among the many new products which stress economy was a new type bonding plaster which makes it possible to refinish old or damaged walls and ceilings without knocking out the old plaster or removing the wood trim. It is said to bond to cracked, chipped or painted walls, to Spanish plaster, glazed tile, concrete, brick, fiberboard, wallboard and insulation board (Nu-Wall Mfg. Co., Milwaukee, Wis.)

WEATHER STRIPS FOR SLIDING DOORS
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ACCURATE METAL WEATHER STRIP CO., Inc.
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Outdoor vistas become so real when enjoyed through wide open sliding doors. The highly improved form of metal weather stripping for the sliding door, as developed by "ACCURATE," has resulted in a wide demand for this type of door. Fully open when weather permits. Closed tight and sealed tight in inclement weather. The home here illustrated was designed by Mr. James Kellum Smith, Architect, N. Y. Write for data sheets.

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NEXT TIME the question of a school clock system comes up, visit your central power station.

Here, where your time is "manufactured" with split-second accuracy, note that the vital job of *keeping* alternating current frequencies on the nose every minute of every hour is entrusted *only* to a *Telechron* Master Clock!

Significant, then, is the fact that Edwards Synchromatic Clocks employ the *same* type of matchless Telechron synchronous motors! Small wonder no other type of clock system can challenge Edwards for consistent, *correction-free* accuracy!

Equally important to you . . . this accuracy is achieved with *unequalled* simplicity! No master clocks, no temperamental electronic devices, no delicate pendulums requiring servicing and regulation. Over the *years,* a service call on an Edwards Clock System is the exception, never the rule.

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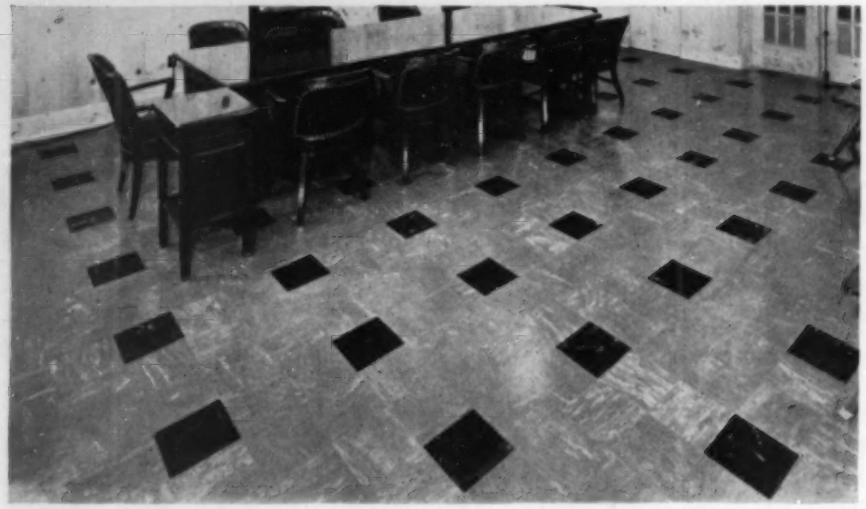
accurate to the second... every second!



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That half you save will go a long way towards paying taxes.

Our correspondence files bulge with letters from satisfied customers who report that WRIGHT RUBBER TILE enables a single maintenance man to do the work of two — with less effort and reduced cost. Mopping with luke-warm water, plus occasional waxing and buffing is all the care needed. They are pleased with the way WRIGHT RUBBER TILE resists damage of all kinds—keeping its new appearance long after other floors have worn out. They appreciate the added safety that results from its resistance to fire.

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Architectural Engineering

ACOUSTICS

(*Continued from page 168*)

ful for giving diffuse reflection of sound. But we must recall that sound waves are several inches to several feet in length and thus require irregularities of this scale for diffusion, whereas irregularities less than a ten-thousandth of an inch will change a glossy appearing surface to one which reflects light diffusely.

Even in small rooms there are some problems of sound distribution. Parallel opposing surfaces can give rise to multiple back and forth reflections called flutter echoes. These can be eliminated by a slight tilt in plan or section, or by breaking up the surfaces for diffuse reflection. Small rooms for conference, music listening or practice can often be shaped adequately at no extra expense simply by laying partition walls at off angles. The more critical requirements of radio and recording studios usually demand more complicated solutions.

Conclusions

A large part of this article has dealt with the noise control aspect of acoustics, and indeed this is usually the most important aspect to be considered in the planning stages. Noise control is the primary means for providing a satisfactory acoustic environment, and without a sufficiently low background noise in a room, the hearing conditions will be unsatisfactory regardless of the design and finish treatment.

The simple element of distance between noise sources and quiet areas can often be had without cost — and yet this element is frequently overlooked, to the expense of the client. Of course noise insulation can be obtained in a wall of almost any thickness, but beyond a point the cost rises tremendously with decreasing thickness or increasing value of insulation. If high insulation with construction of reasonable cost and weight is desired, considerable thickness must be provided. Adequate thickness must also be planned for low frequency absorptive treatment where required.

There is no need for *afterthought* attachment of loudspeakers, absorptive materials, and panels to deflect echoes. In fact nearly all of the technical requirements for good acoustics can be specified

(*Continued on page 246*)

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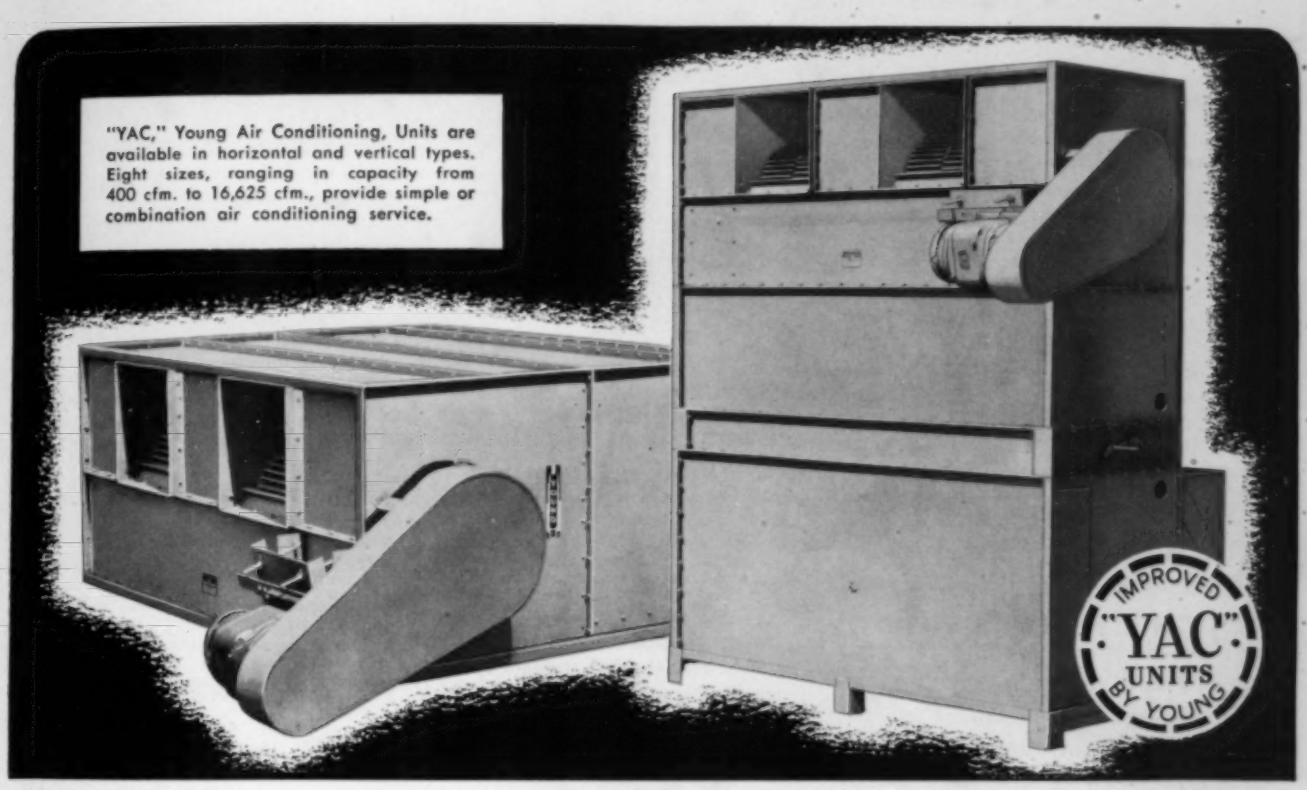
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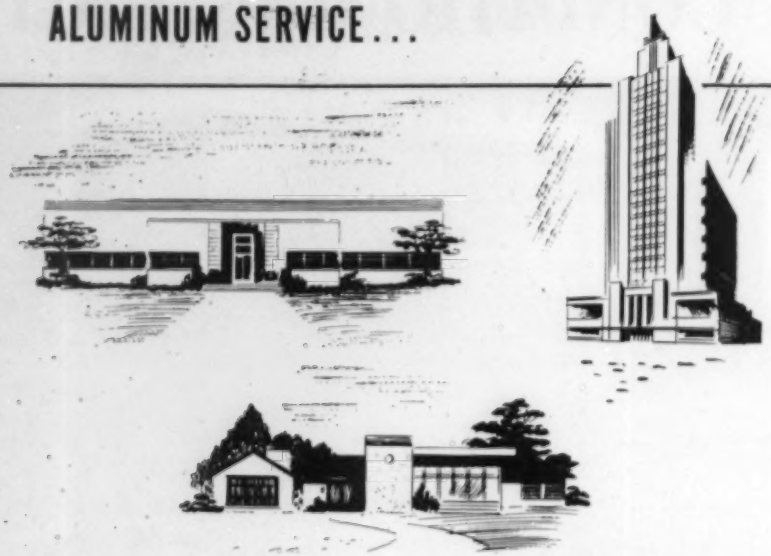

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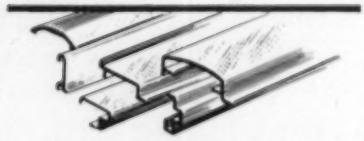

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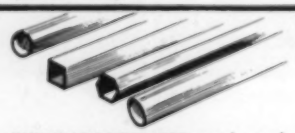

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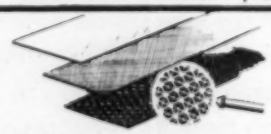

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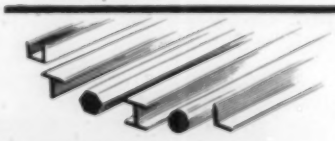

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Architectural Engineering

ACOUSTICS

(*Continued from page 244*)

in advance, along with requirements for structure, lighting, and heating and ventilating. In every sense, acoustics is an integral part of the architectural problem — from basic planning to final detailing.

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Architectural Forum, AF
Progressive Architecture, PA
The Journal of the Royal Institute of British Architects, RIBA

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Sound Absorption Coefficients of Architectural Acoustical Materials, Bulletin XI, Chicago, Acoustical Materials Association, 1949.

(*Continued on page 248*)

Individual lighting fixtures in this PLEXIGLAS installation measure 6 x 8 feet and consist of four corrugated-bottom diffusing panels with curved side panels—all of white translucent acrylic plastic. Each fixture is lighted with ten 96" 300 MA Slimline and two 40-watt fluorescent lamps. Room ceiling is 18 feet high. Fixtures installed by Bell Electric Company. Design Consultants: W. E. Conley, General Electric Company; John Liston, George S. Rider Co.; W. A. Mize, Cleveland Electric Illuminating Company.

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Architectural Engineering

ACOUSTICS

(*Continued from page 246*)

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KITCHENS

(*Continued from page 170*)

a separate door for the garbage man. The floor of this room should be provided with a deep drain in order that the garbage cans can be rinsed properly. A hot water tap and hose are necessary. A rack or rod for drying wet mops and a place for the mop buckets should be included.

Helpers' Room

The helpers should be provided with a locker room. A toilet and lavatory should be included; the wash sink should have foot control for faucets.

Clean-Up Area

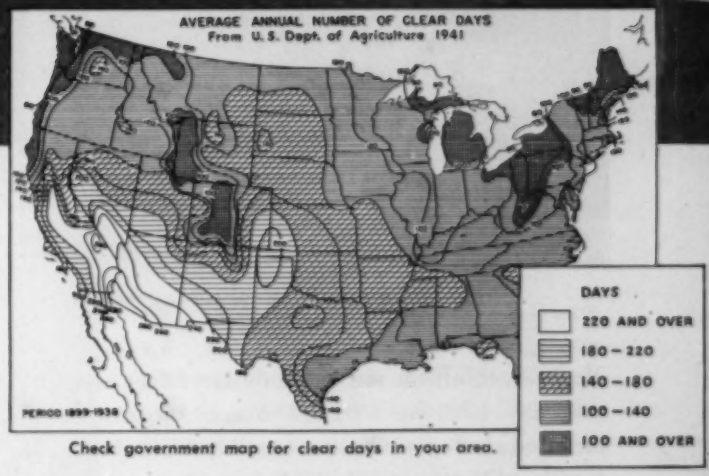
Dishes and trays are returned to the pass window which opens into the dish-washing unit. The pass window should be wide enough to permit the quick return of trays and dishes. To save time and labor, counters in the pass windows may be divided into sections — one for silverware, one for glasses, one for dishes and the last section for trays.

The soiled dish table should be provided with a scrape hole and garbage can beneath. It is desirable to have a hose with a spray attachment and a small sink so that the dishes may be pre-rinsed before entering the dish-

(*Continued on page 250*)

The Sun Hides on Most School Days...but...

Montecito School, Martinez, Calif.



Check government map for clear days in your area.

Ceco Steel Windows provide *plenty* of daylight for Good Vision

Maybe you don't know how elusive old Sol can be during the school term. Actually, he hides most of the time. So say government figures. In 90% of the country, there are less than 130 clear days in a whole year when you deduct weekends. Then subtract 90 summer days and it's easy to see most school days are overcast. Therefore, it's most important in providing light for schools to use a window that admits the most daylight. Here, Ceco Steel Windows truly meet the test because only steel windows admit enough daylight on overcast days to provide good vision. Then, too, steel windows offer controlled ventilation up to 100%...assure distant vision. The cost? Lowest of all installed. Maintenance? Cost is lower here too. Any way you figure it—cost, maintenance or functional superiority, Ceco Steel Windows are the best buy.

*Bamberger & Reid, architects. Roger Sturtevant Photo.

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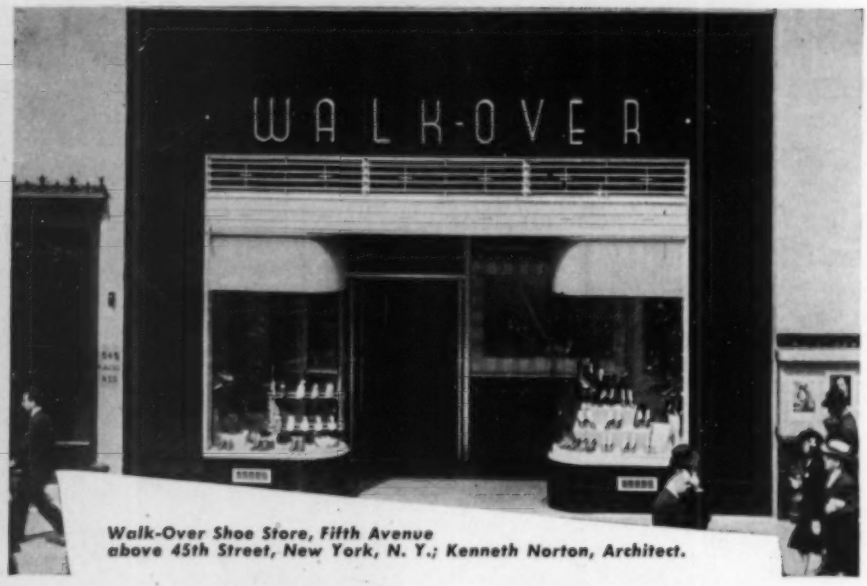

Walk-Over Shoe Store, Fifth Avenue above 45th Street, New York, N. Y.; Kenneth Norton, Architect.

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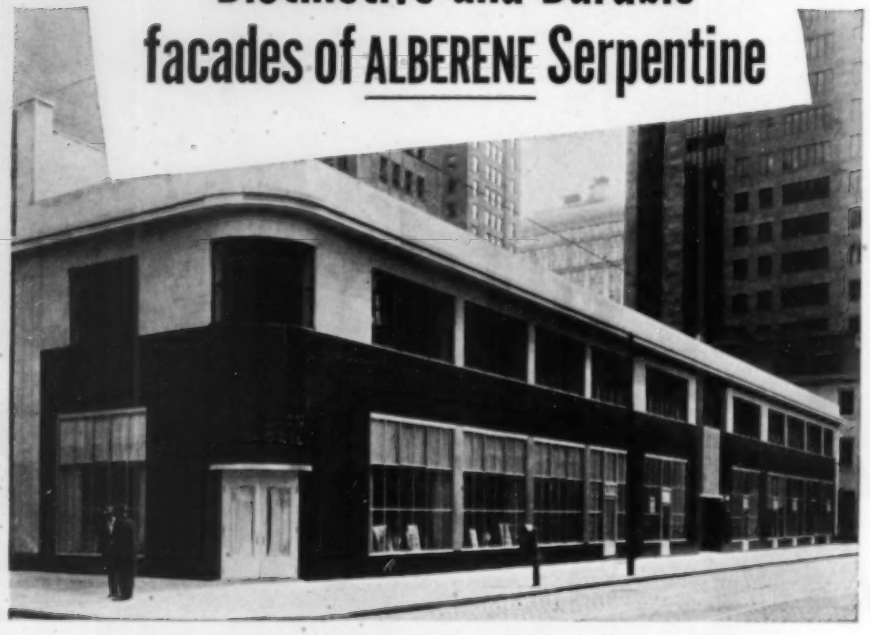

Flanders Bar & Grill, Philadelphia, Pa.; George W. Pepper, Jr., Architect.

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You'll find Alberene Virginia Black Serpentine doubly economical — low in installation cost and free of maintenance expense. It can be cut into sections as thin as ⅞", because it has great toughness and density. We'll be glad to send you a set of samples, conveniently boxed, showing the range of dark stones available from our quarries. Just write to —

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KITCHENS

(*Continued from page 248*)

washing machine. In the smaller schools, if the dishwashing machine is not installed, three sinks are necessary for a pre-rinse, wash and rinse.

A dishwashing machine saves time and labor, and insures sterilization of dishes. The machine should be sized to take trays. (In the elementary schools, the trays are 12 by 14 in.) The water for washing should be 135 to 140 F, and the rinse water 180 F. An adequate hot water storage tank of 150 gal is a necessity.

A handwashing sink for the employees must be located in the kitchen. This is a health department requirement in many areas.

General Suggestions

Manager's Office — A small office with a desk, files, and shelves for cookbooks should be provided.

Dining Area — The dining area should be completely cut off from service and kitchen areas with a partition having proper entrance and exit doors to and from the service counter and the kitchen itself.

Equipment Details

The following equipment needs are specific, but the sizes are approximate since all models do not require the same space.

Refrigeration. Food products require different temperatures. Meat, fish and poultry, 32 F; fruits, vegetables and dairy products, 45–50 F; frozen foods, 5 F. Refrigerator space is usually figured $\frac{1}{10}$ to $\frac{1}{5}$ cu ft per meal served, but in elementary schools extra refrigeration for the mid-morning milk supply is needed.

Serving Counters. The serving counters should be planned with a cold plate or ice pan for salads and milk. If there are two service lines, each service line in the larger junior and senior high schools should have four rectangular compartments and four well-type compartments. In the elementary schools, two rectangular compartments, three 8½-in. wells and one 6½-in. well are needed. Coffee service is needed for the teachers' line.

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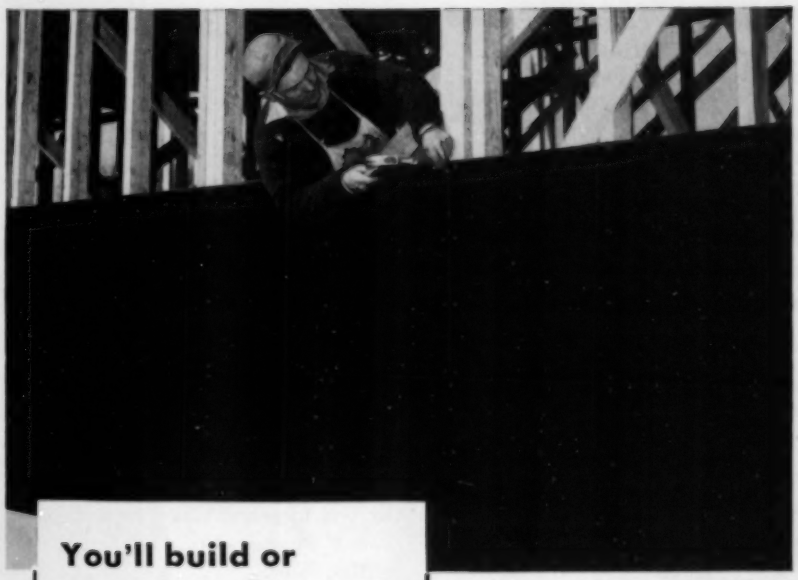

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Fireproof wallboard, decorative insulation boards, lath, plaster, lime, sheathing, wall paint, rock wool insulation, metal lath and sound control products.

PRODUCTS

(*Continued from page 174*)

Asbestos Cloth

Claimed to be the first commercial offering of an asbestos textile for drapery purposes, *Colorbestos* is said to provide a fire-safe fabric. It was developed for use as drapery or wall covering in public gathering places.

Woven of asbestos yarn on a warp of cotton, the material is available in 10 plain colors and three different weaves. Special designs are made to order. All colors are reported fast to daylight, washing, dry cleaning and pressing. Johns-Manville, 22 E. 40th St., New York 16, N. Y.

Tubular Latch

The *Clinton Ball Bearing Tubular Latch* is reported very easy to install, with only one hole to bore in the door — 13/16 in. diam by 1⅝ in. deep. No alignment of knobs or latch is said to be necessary and no boring jig needed. The knob is stationary and acts as a pull. A locking device is provided for bed and bathroom doors. In emergency, a screw driver unlocks door from outside.

The unit has all brass screw machine parts and chromium steel ball bearings. An adjustment of the latch regulates spring tension and extension of ball to allow for shrinkage of door. The latch is available in all standard finishes, coated with a synthetic lacquer said to be resistant to moisture, salt spray, perspiration and corrosion. Clinton Lock Co., Clinton, Iowa.

Hand-Split Siding

The Olympic Stained Products Co., following a recent name change from the West Coast Stained Shingle Co., announces a new textured, pre-stained cedar siding. Called *Olympic Handsplit Siding*, the product is said to be actually cut by hand and then resawn to obtain

Split cedar siding has strong character lent by bold shadow line, rough texture, and variety of colored finishes

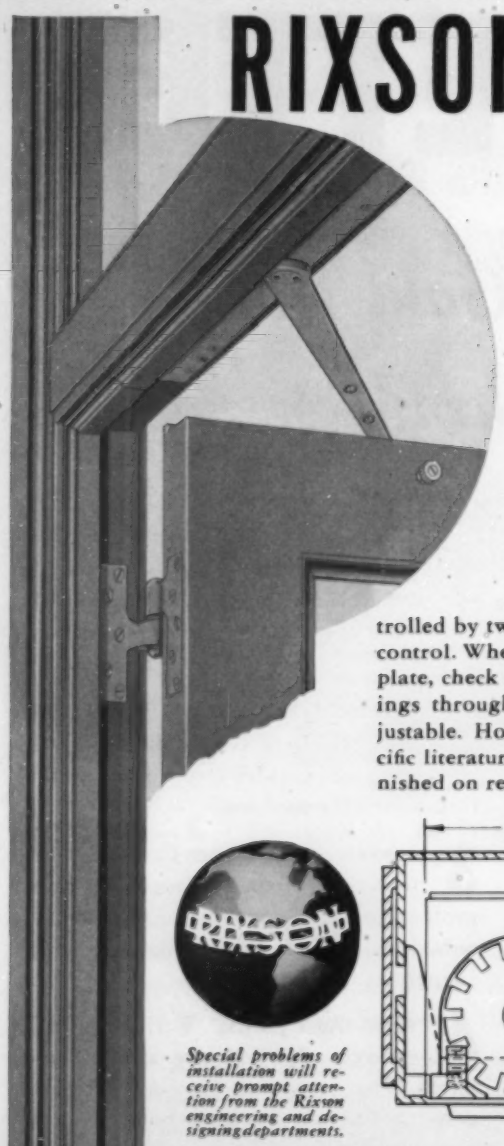
a beveled siding with a hand-split face. The butts of the siding run from ¾ to 1½ in. in thickness, with the tapered edge running down to ¼ in. thick. Lengths vary from 6 to 14 in.

Stained finishes include Beachwood Gray, Seafoam Green, Chamois, California Rustic, Russet Brown and Bleachtox — a bleached silver gray. Olympic Stained Products Co., 1118 Leary Way, Seattle, Wash.

Drafting Aid

The *Dremel* electric eraser incorporates a burnisher at the opposite end of the eraser shaft to smooth erased areas for re-drawing, and a rotating abrasive disk for sanding pencil leads. Through the medium of a worm gear drive, power is said to be increased and

(*Continued on page 254*)



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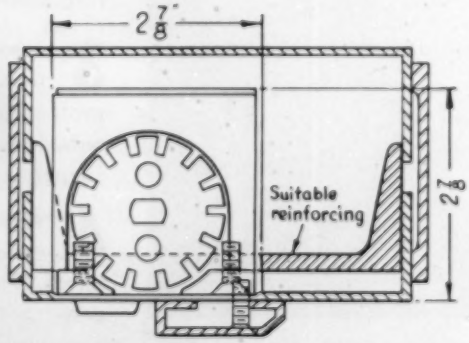

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PHILADELPHIA—G. Norris Williams, 211 Greenwood Ave., Wyncote, Pa., Tel. Ogontz 1929.
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PRODUCTS
(*Continued from page 252*)

an ideal erasing speed of 3000 rpm achieved to prevent burning or tearing of paper. Other features include a vibrationless motor, light weight, sliding snap type switch, and a hanger hook. The unit is furnished with a 6-ft rubber cord and plug, 3 grades of eraser tips and 6 extra abrasive disks. Dremel Manufacturing Co., Racine, Wisc.

Electric Radiant Heating

The *General Radiant* electrical panels consist of wire networks embedded in fireproof panels similar to wall board. The panels are designed to be mounted on brackets or imbedded in walls or ceilings. An ornamental metal moulding carries connections that hook the panel system into the house wiring. They can be turned on or off by a switch, like the lights. Temperature control is by an individual thermostat in each room.

Three types are designed for various uses: *Medrae* for wall installation; *Hirae* for high level installation in factories, auditoriums, etc; and *Dulrae* for normal ceiling installation. Also available is a portable screen panel which can be plugged into any a-c or d-c outlet. The General Radiant Heater Co., Inc., 101 Park Ave., New York 17, N. Y.

Plastic Cove Base

An improved *Fremont* vinyl plastic cove base is announced as having a much higher gloss finish, to be much broader at the base and more pliable to work with. The material is available in continuous lengths, 120 ft to the roll, 240 ft to the carton. Widths are 4 or 6 in. The manufacturers recommend that it be applied to the base wall with Fremont's new adhesive. The Fremont Rubber Co., Fremont, Ohio.

Truck Loading Ramp

The *Hamilton Truck Loading Ramp* is designed to bridge difference in levels between a loading dock and a transport truck or trailer, making it possible to run a power or hand truck directly into a truck body for loading or unloading goods.

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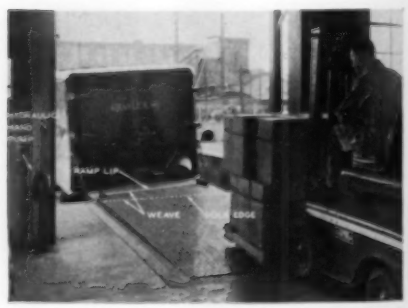
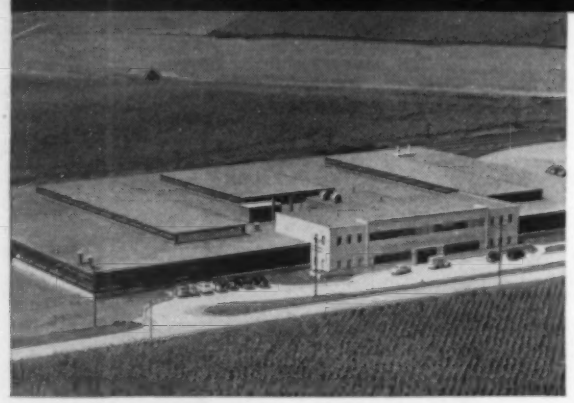


Loading ramp features freedom of adjustment to allow surface flush with trucks

The ramp is built in 5-, 8- and 12-ft lengths, and in widths of 5-, 6- and 6½-ft. Operation is by means of a hand hydraulic pump or by a power pump where ramps are installed in multiple. Arthur S. Hamilton, Jr., Consulting Engineers, 205 Davis Bldg., Rochester, N. Y.

(*Continued on page 256*)

JOB DATA ON ANOTHER FIBERGLAS* INSULATED ROOF



Building: Victor Animatograph Corp., Davenport, Iowa
Architect: Graham Anderson Probst & White, Inc.
General Contractor: Geo. A. Fuller Co.
Roofing Contractor: Holmquist Co.
Roof Deck: Metal
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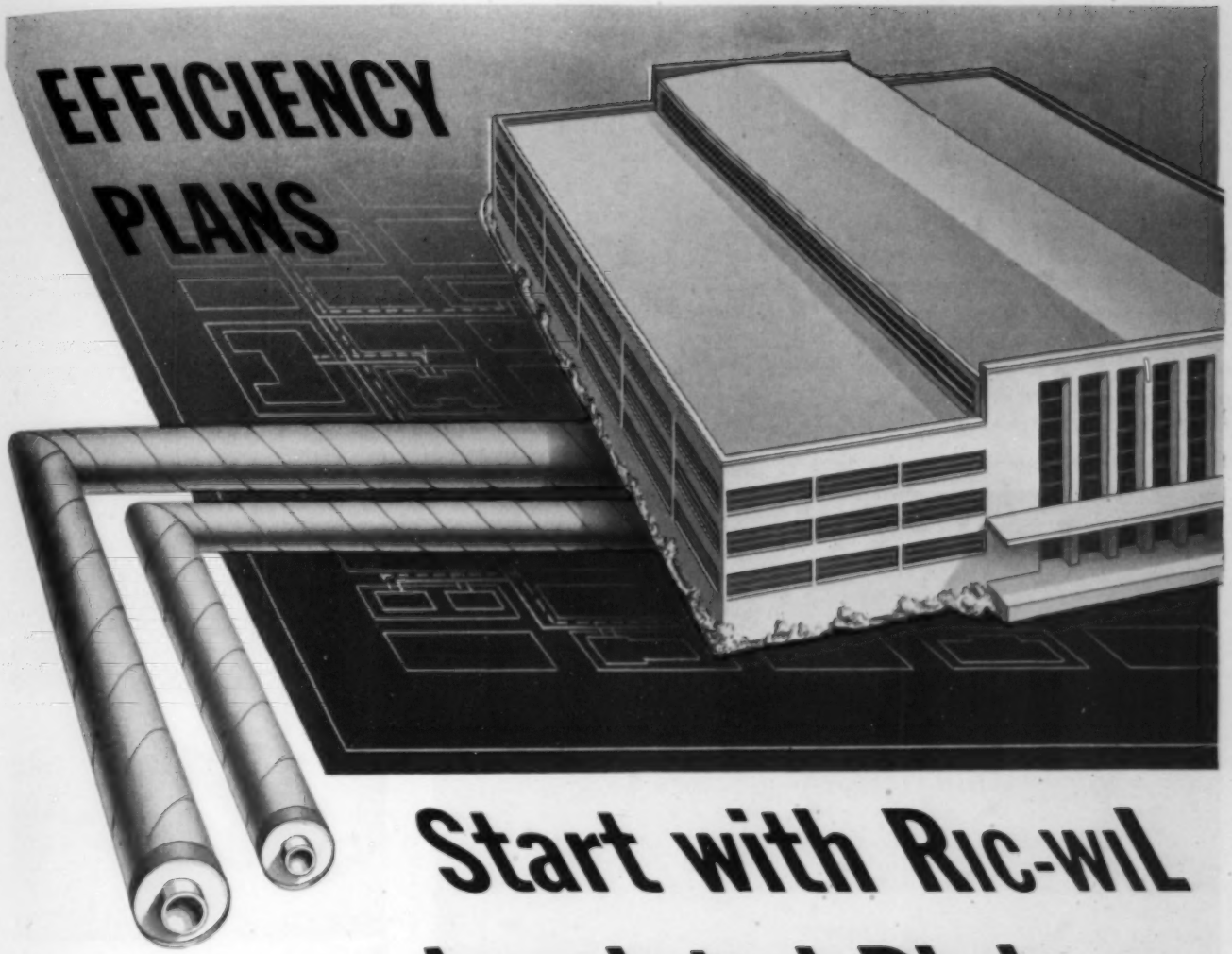


Start with Ric-wiL Insulated Piping

● Ric-wiL Prefabricated Insulated Piping occupies a key position in the planning and production of efficient insulated piping in central heating or air conditioning systems for multiple building projects.

Experienced architects, engineers and contractors recognize Ric-wiL systems as the practical answer for exposed or underground insulated piping. They are custom engineered and prefabricated of the finest materials for quick economical installation, efficient performance, and long maintenance-free life.

The Ric-wiL engineering service, developed through forty years' experience in the insulated piping field, is available for planning and field consultation.

Call the Ric-wiL office nearest you and our representative will be glad to give you detailed technical information as related to your specific problem.

For full technical information on Ric-wiL Insulated Piping Systems, call or write the Ric-wiL office nearest you or Dept. 9-N in Cleveland, Ohio.

RIC-WIL
INSULATED PIPING SYSTEMS
THE RIC-WIL COMPANY · CLEVELAND, O.

OVERHEAD • UNDERGROUND

FOR FORTY YEARS THE GREATEST NAME IN INSULATED PIPING SYSTEMS

PRODUCTS
(Continued from page 254)

Slimline Lampholders

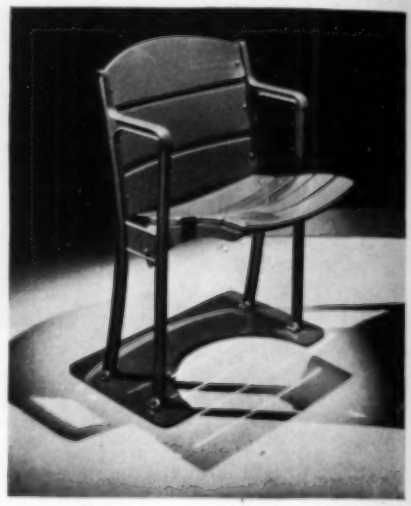
The compact *Bryant Push Contact Lampholders*, designed to accommodate all sizes of slimline lamps, are made of white thermosetting plastic. The leads are said to simplify wiring by making it unnecessary to twist or dip the wire ends. The devices are supplied in pairs for the low voltage primary and high voltage secondary and can be provided for butt-on mounting or equipped with brackets for flush mounting. The Bryant Electric Co., Box D, Barnum Station, Bridgeport 2, Conn.

Budget Sink

The *Elkay* 39-in. stainless steel sink is designed for use as a component part of their 60-in. apartment kitchen installations. The sink, as well as the other units of this "package kitchen," has a stainless steel top set on a white enamel cabinet base. They are recommended for use in summer cottages, guest houses, recreation rooms, etc. Elkay Manufacturing Co., 1874 S. 54th Ave., Chicago 5, Ill.

Stadium Seat

A stadium-type chair, for use in arenas, field houses, stadia, etc., is said to have been so engineered as to eliminate all tearing and pinching hazards, and to afford maximum comfort. It can be furnished for either floor or riser installation.



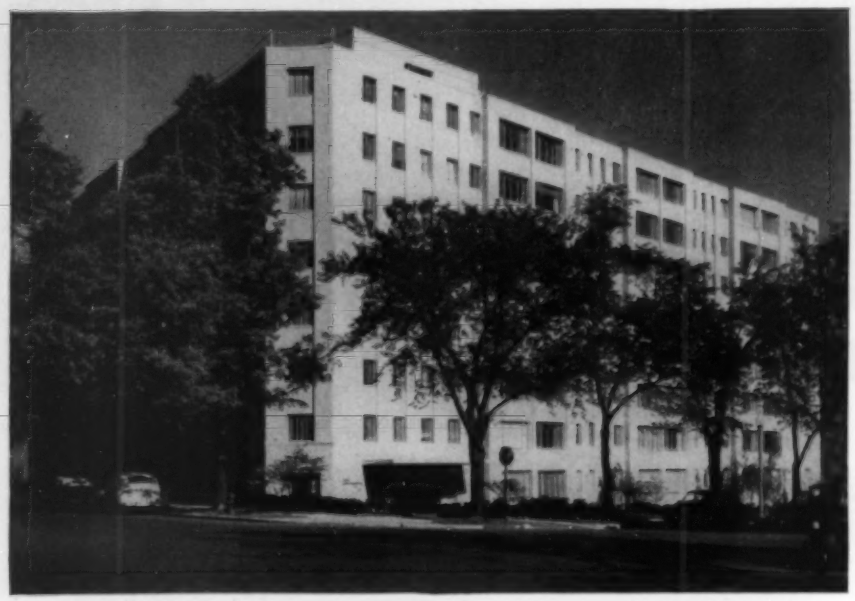
Greater comfort and safety are featured in this iron and wood stadium-type seat

The seat is durably constructed, with gray enameled iron standards and arms. Back and seats are of wood slats in natural color or enamel finish. The chair is equipped with ball bearing hinges and rust-resisting hardware. Ideal Seating Co., 547 Ann St., N.W., Grand Rapids, Mich.

Floor Slab Sealer

The *Stafco On-Grade Sealer* was developed to seal concrete ground slabs against capillary moisture and alkali, and to eliminate condensation between the slab and finished floors. Manufacturers claim that the material will function over radiant heating, but is not an adhesive, and will not seal off hydrostatic pressure. Two coats are recommended. The first coat is said to take from 1 to 4 hrs to dry, the second, 8 to 12 hrs. One gallon reportedly covers from 50 to 75 ft with a two coat application. Standard Floor Co., 141 Gulf Bldg., Pittsburgh 19, Penn.

(Continued on page 258)



How would YOU air condition the Congressional Hotel?

NOW, keep all the problems in mind . . . 308 rooms to be made comfortable whether they're occupied by vigorous young salesmen who like it really cool or by nice old ladies who take a chill at the drop of a hat . . . not much space available for ductwork . . . keep building costs down.

What's the *one* system that'll give you everything you need? Well, the Congressional Hotel people found out it was Modu-aire.

And no wonder . . . Modu-aire lets every guest, in any room, choose his own weather . . . without complex zoning or balancing.

Modu-aire doesn't take a single inch of ductwork . . . slim copper tubes hidden inside the walls out of the way carry the heating and cooling medium.

Modu-aire simplifies installation . . . piping contractors install quickly and easily at amazingly low cost.

Modu-aire is a year 'round system . . . cools and dehumidifies in summer, heats in winter . . . uses the same coils and piping for each at no extra cost.

Want to know more? Just drop us a line.

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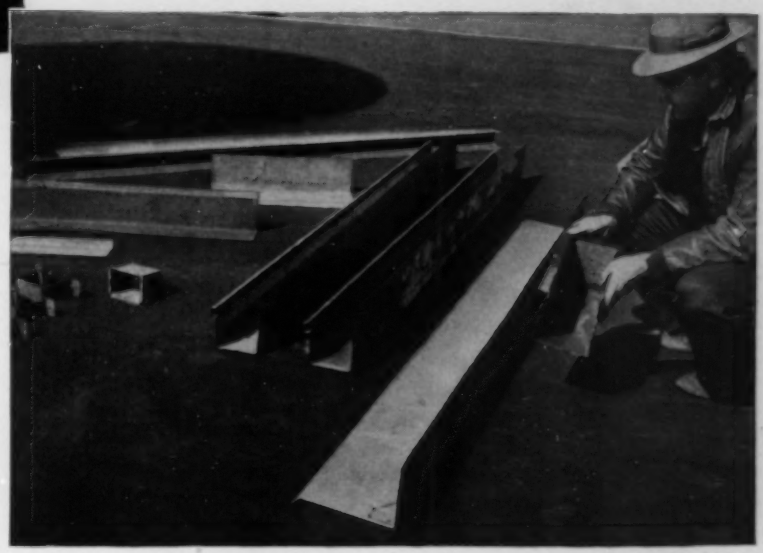
UNITED STATES AIR CONDITIONING CORPORATION

COMO AVENUE S. E. AT 33RD, MINNEAPOLIS 14, MINN.

Put a ROOF on the rising cost of Upkeep!

Roof upkeep doesn't have to be a constant expense. Architects can end this problem with economical Monel Roofing Sheet— roofing that lasts the life of the building

MONEL PARAPET FLASHING, *sidings, skylight trim and gutters. Installed on a coal-burning power plant in 1913, they are still in good condition.*



INSTALLED ON A *chemical manufacturing plant, these Monel gutters, base, cap and step flashings, down spout straps and eaves boxes are successfully resisting destructive fumes, smoke and lowland dampness.*

There's one simple way to assure your clients long-lasting, trouble-free roofing.

Give them roofs of MONEL*.

Monel is a non-rusting alloy consisting of approximately ⅔ nickel and ⅓ copper. Throughout industry it is known for its *resistance* to:

- ***corrosion***
- ***severe stresses***
- ***wear and abrasion***
- ***buckling and cracking***

Monel is doing hundreds of different jobs — *tough* jobs — in many fields, in many forms.

To you, it offers an opportunity to help clients reduce annual outlays for roof maintenance. A quick look at the record will prove that. Monel roofing installations date back to 1910 and they are still in good condition today.

No wonder Monel is called "life-of-the-building" roofing!

Investigate the practical advantages of Monel Roofing Sheet for the building now on your boards. Remember, the term "Monel Roofing" includes not only entire roofs, but also roofing parts such as flashings, skylight frames, ventilators, louvers, gutters, siding, expansion joints and copings.

And roofers' quotations on life-of-the-building Monel installations are reasonable and practical. Monel's excellent properties permit use of lighter gauge sheet on practically every job.

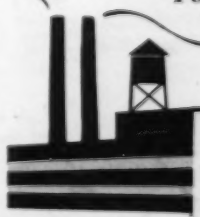
WRITE FOR NEW BULLETIN

You'll find a complete review of the properties and characteristics of this economical roofing metal in our new bulletin, *Basic Application Data — Monel Roofing Sheet*. In addition to indicating how you can save your clients money by reducing gauges, the bulletin gives information about availability, discusses installation procedures, and provides a sample specification wording.

SEND FOR YOUR COPY *of this helpful, file-size bulletin now. The coupon will bring it to you promptly and without obligation.*

MONEL ROOFING

For the "Life-of-the-Building"



GET VALUABLE REFERENCE BULLETIN

Architectural Section
The International Nickel Company, Inc.
67 Wall Street, New York 5, N. Y.

Please send me without obligation a copy of your new bulletin for architects, *Basic Application Data — Monel Roofing Sheet.*

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Address.....

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City.....Zone.....State.....

EMBLEM OF SERVICE

INCO TRADE MARK

THE INTERNATIONAL NICKEL COMPANY, INC.

*Reg. U. S. Pat. Off.

67 Wall Street, New York 5, N. Y.

PRODUCTS
(*Continued from page 256*)

Microfilm Files

Filmsort microfilm equipment has been developed for use in offices for filing images of bulky documents and plans on standard sized filing cards. The equipment includes a camera, mounter and viewer. The camera will handle records up to 36 by 48 in. It is a self contained unit with automatic spacing and masking devices. The mounter is said to cut and insert 400 frames of film per hour into cards. The viewer projects the image on a 16- by 16-in. screen, and can be used in daylight. Standard enlarging equipment can make photographic copies from the microfilm in the Filmsort cards. Film 'N File, Inc., 330 W. 42nd St., New York 18, N. Y.

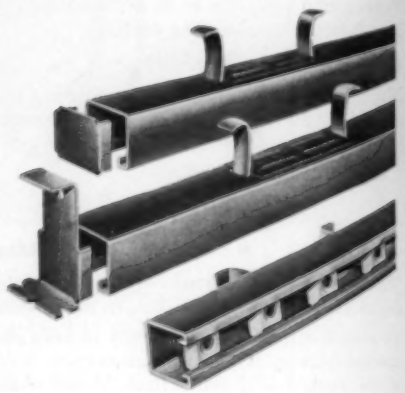
Incandescent Bulb

A new bulb, the *G. E. 50GA*, is announced as having a unique mushroom shape and an enamel finish to form a combined light source and fixture in one unit. The lamp was developed for use in ceiling fixtures in which bare bulbs in base-up position are used.

To be made currently in a 50-watt size, the lamp is said to be 3½ in. in diameter at the widest point, and to direct two-thirds of the light upward. The lower portion of the bulb is covered with a soft-toned permanent enamel finish. General Electric Co., Nela Park, Cleveland 12, Ohio.

Concrete Insert

A new concrete insert, known as the *Series P-3000*, is said to allow attachments to be made quickly and easily at any point along the channel without disturbing other attachments. A spring nut is inserted into the channel at the point where attachment is desired, and bolted to the fitting.



Insert channel for concrete is available with choice of ends, fittings for attachments at any desired point

The inserts may be had in stock lengths from 3 in. to 20 ft, and are available with Type A plain drive-in end caps or Type B anchor type drive-in end caps equipped with slots for nailing. The insert channel measures 1⅝ in. wide by 1⅜ in. high outside dimensions, is formed of 12 gage cold rolled steel and comes in several finishes. Load capacity is said to be 2000 lb per ft, with a safety factor of 3. Unistrut Products Co., 1013 W. Washington Blvd., Chicago 7, Ill.

Radiant Heat Fittings

Redi-Bends is a new line of pre-bent pipe fittings for radiant heating installations, designed to eliminate pipe bending on the job. The units are avail-

(*Continued on page 260*)

Pella
LITE-PROOF
SHADES
The practical way
to darken rooms
VIEWING slides or motion pictures in an inadequately darkened room induces eyestrain. Pella Lite-Proof Shades come with specially designed side guides and sill locking bar that hold the plastic coated shade fabric in place and seal out light.
FIT ANY TYPE WINDOW
Pella Lite-Proof Shades are made-to-measure for any size or kind of window. They are permanently installed in classroom, laboratory or auditorium.
DURABLE SHADE FABRIC
Tough, plastic-coated fabric of 100% opaqueness will not crack or become brittle.
NEAT APPEARANCE
When not in use, Pella shades roll up into a neat metal headpiece, out of the way and protected from dust or dirt.
WRITE TODAY for literature and name of nearest dealer.
ROLSCREEN COMPANY
DEPT. B-21, PELLA, IOWA

Trane Unit Ventilators in Stratfield School, Fairfield, Connecticut. *Architects, Lyons and Mather, Bridgeport, Connecticut.*

Ventilation—for the life of the building

Trane Unit Ventilators give controlled ventilation to classrooms in the Stratfield School and provide the utmost in *effective*, *economical* and *dependable* operation:

EFFECTIVE because they bring in healthful outdoor air, clean it, warm it, and spread comfort to even the remotest corners of the classroom—QUIETLY AND WITHOUT DANGER OF DRAFTS!

ECONOMICAL because over two decades of Trane engineering know-how have been applied to developing today's attractive sturdily-constructed unit ventilator. As a result every Trane Unit Ventilator embodies thoroughly proved and tested designs, expertly built from top quality material.

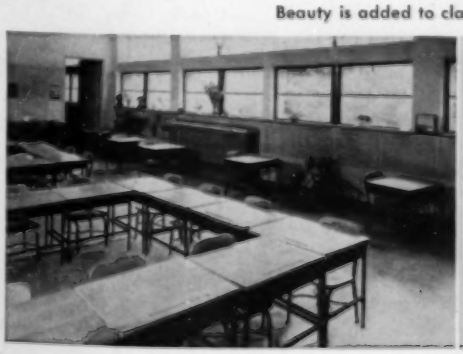
DEPENDABLE because Trane has developed smoothly running centrifugal fans—particularly desirable where extremely quiet operation is necessary. Kinetic Orifice coils guard against freezing and assure positive, capacity heating. Block-offs and quick acting dampers prevent cold outside air from blowing directly through the unit. Generous filters trap dust and dirt.

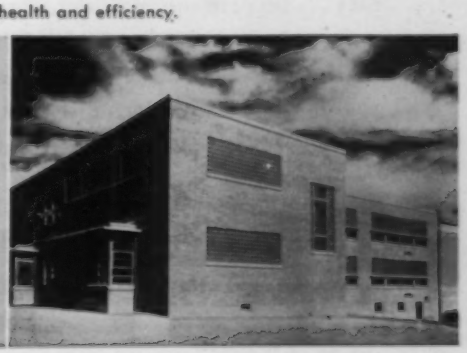
There are Trane Unit Ventilators for every size room—gymnasium, classroom, auditorium or office. The Trane sales engineer in your area will be glad to show you how Trane Unit Ventilators and other Trane products are being used to meet heating, ventilating and air conditioning needs in modern day schools.

THE TRANE COMPANY...LA CROSSE, WIS.
EASTERN MANUFACTURING DIVISION, SCRANTON, PA.

Manufacturing Engineers of Heating, Ventilating and Air Conditioning Equipment—Unit Heaters, Convector-radiators, Heating and Cooling Coils, Fans, Compressors, Air Conditioners, Unit Ventilators, Special Heat Exchange Equipment, Steam and Hot Water Heating Specialties ... IN CANADA, TRANE COMPANY OF CANADA, LTD., TORONTO.

Beauty is added to classrooms while clean, tempered air promotes health and efficiency.





PRODUCTS
(*Continued from page 258*)

able in pipe sizes ranging from ½ to 2 in., and in bends of 45, 90 and 180 degrees. The latter bend is made in a choice of centers for each pipe size The fittings are furnished in weld-, sleeve- or coupled-type, and in either wrought iron or steel. The weld-type has ends formed into welding sockets and permits use of an electric seal weld. The sleeve-type is available with ends beveled for welding, and is furnished with or without welding sleeves. The coupled-type has recessed, taper tapped couplings for those who prefer screwed fittings. The Capitol Manufacturing & Supply Co., 153 W. Fulton St., Columbus 16, Ohio.

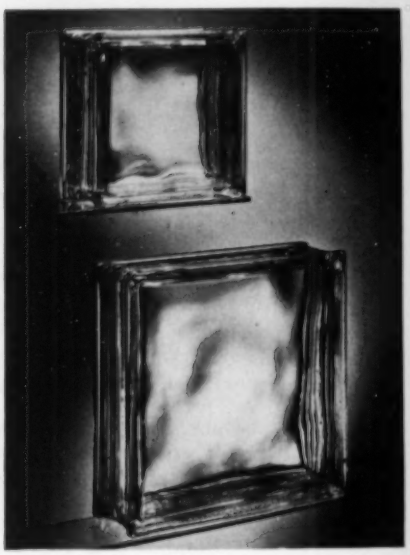
Roof Exhauster

Produced for industrial and commercial ventilation, the *Chicago Axial-Flo* roof exhauster employs a low mushroom-type diffuser head to permit an uninterrupted flow of discharged air. The unit is of welded heavy steel plate, with a hinged cover on the motor driven fan to permit easy access for inspection, maintenance and lubrication.

The cast aluminum alloy wheel has adjustable pitch blades ranging in diameter from 14 to 48 in. Air deliveries range from 1000 to 40,000 cfm, static pressures to 1 in. The entire unit is supported on rubber to reduce vibration and noise. Exhausters are shipped completely assembled, with motor, frame, housing and safety switch. Chicago Blower Corp., 4558 W. Congress St., Chicago 24, Ill.

Transparent Glass Block

A glass block design, described as having sparkling transparency, is now available in 8- and 12-in. sizes. This *Random Clear Insulux Glass Block No. 31*) is said to achieve a hand-formed



New glass block is transparent with hand-formed appearance and characteristics

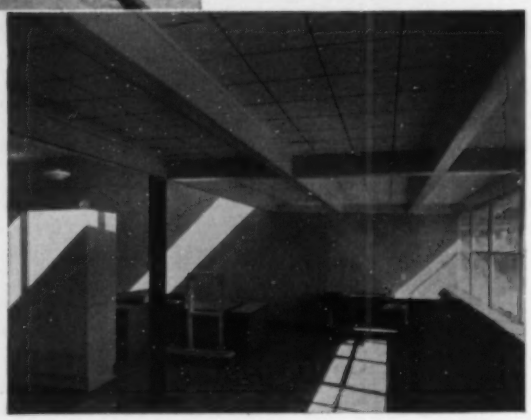
random effect by using several slightly dissimilar molds to form the two halves of the block, and then using different combinations of the halves. American Structural Products Co., Ohio Bank Bldg., Toledo 1, Ohio.

Flush Pedal Converter

The *Easy Flush Pedal* converts a hand operated flushing action on water closets to a sanitary foot pedal flush. The unit is designed to accommodate all flushometer and tank type water closets on

(*Continued on page 262*)

HOW TO KEEP COSTS DOWN IN SCHOOL DESIGN



Buri-Buri Elementary School
South San Francisco Unified School District

Architects:
Bamberger and Reid
San Francisco, California

Specifications call for interior Douglas Fir Plywood stained with one coat of Cabot's Stain Wax.

Specify

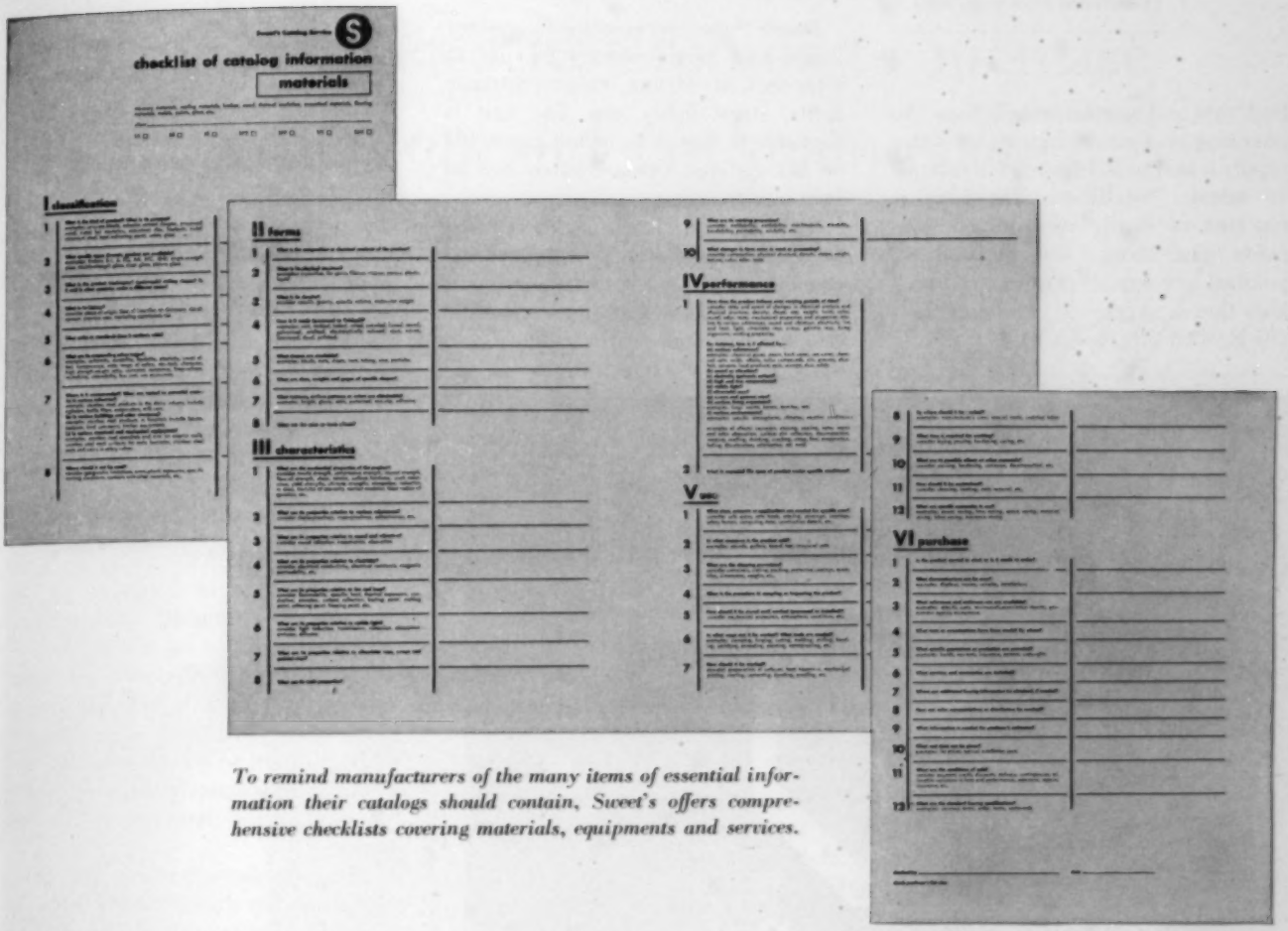
CABOT'S STAIN WAX

An inexpensive, attractive finish for all interior woodwork. In one application produces the effect of a penetrating stain plus the soft lustre of a waxed surface. Only one coat necessary . . . no priming required. Easy to clean and maintain.

Cabot's Stain Wax offers a wide range of colors, many available from no other source, including many light, blonde shades ideal for modern interiors.

Write Today for complete information and Stain Wax Color Card for your specification files.

Samuel Cabot, Inc.
449 OLIVER BLDG., BOSTON 9, MASS.



To remind manufacturers of the many items of essential information their catalogs should contain, Sweet's offers comprehensive checklists covering materials, equipments and services.

should a catalog contain?

mum size for all catalogs and the general type of information. Beyond this, the adequacy of any catalog in Sweet's File, whatever its size, depends on the manufacturer's recognition of your information needs and on his realization of the advantage of giving you all essential information in this convenient form.

Through an experienced staff of consultants, designers, writers, draftsmen and printing experts, Sweet's offers clients specific recommendations on catalog content and format, and all needed assistance in the production of their catalogs. These continuing efforts have brought about a vast improvement.

Most of the manufacturers who send you their catalogs in Sweet's File now recognize the importance of giving you all essential information on their products. Others will do likewise when they are persuaded that this is the best way to get your consideration and the specifications leading to orders.

Sweet's Catalog Service
Division of F. W. Dodge Corporation
119 West 40th Street, New York 18, New York

PRODUCTS

(*Continued from page 260*)

both new and existing installations. No plumbing changes or shutting off water supply is said to be required for a simple 10 minute installation. The item is reported of sturdy construction, precision engineered, and finished in polished chromium plating on heavy gage brass. Approved Products Co., 205 E. 42nd St., New York 17, N. Y.

Fluorescent Pylon Lights

Revere Pylon-lites combine fluorescent lamps and glass columns for use in after-dark advertising, building entrance lights, street lights, etc. The unit is available in halves to permit mounting on flat surfaces. Opaque letters can be fired into the glass.

Construction of the lights is said to be strong and sturdy. A heavy steel channel serves as a structural support of the fixture as well as an enclosure for the ballasts and wiring. The glass enclosures are sealed in two gasketed hinged frames, which may be opened for lamp replacement. Mounting standards and shafts are available. Revere Electric Mfg. Co., 6009 Broadway, Chicago 40, Ill.

Metal Storage Equipment

Re-designed storage equipment for tool and stock rooms is announced, which is said to have a correct type of storage accessory available for every item of tools, supplies and wastes. Typical units include sloping front cases, drawer cases, sloping shelf units and swinging panels. Units may be fitted with various adjustable dividers and racks. Lyon Metal Products, Inc., Aurora, Ill.

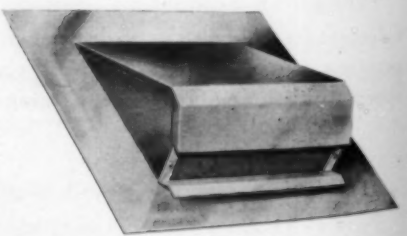
Lacquer Hardware Finish

Improvement in hardware for the *Fenestra* hollow-metal entrance door is claimed, with the use of a new lacquer finish said to be impervious to all known cleaning fluids, and the salts and acids of perspiration. The finish is also claimed to be resistant to bumps, scratches and abrasion, and cannot be dissolved by any standard paint remover or lacquer thinner.

The manufacturers say the finish eliminates the chief need for hardware replacement or refinishing. Detroit Steel Products Co., 3113 Griffin St., Detroit 11, Mich.

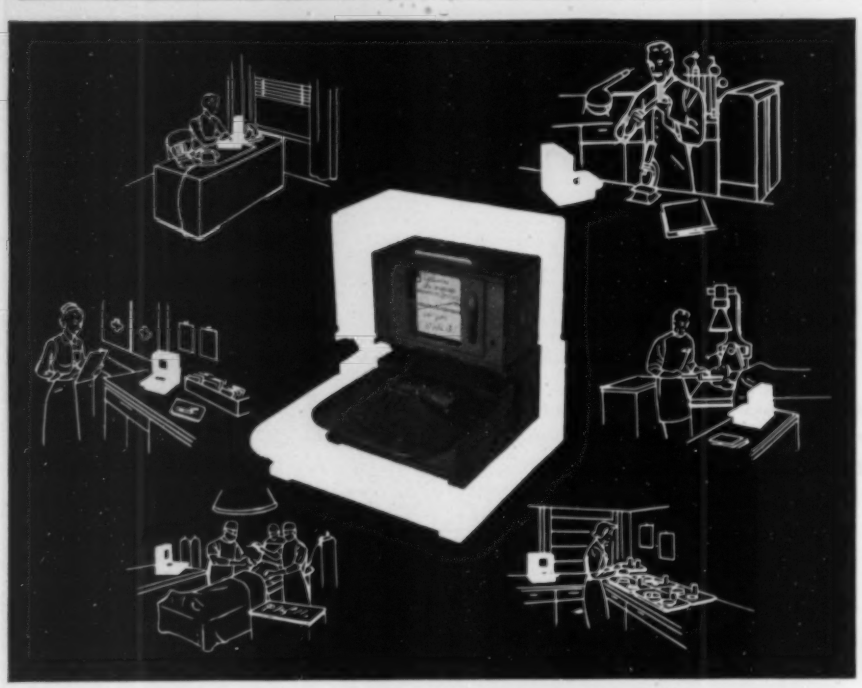
Roof Ventilators

The *Leslie* slant roof ventilators are made of 16-oz copper and are flanged, baffled and screened. They are said to be weathertight and insect-proof. Two sizes are available: the *SRC 10-3*, with an air opening of 30 sq in.; and the *SRC 20-3*, with 60 sq in. Leslie Welding Co., 2943 Carroll Ave., Chicago 12, Ill.



Copper slant roof ventilator is prefabricated to save on-the-job time and labor

(*Continued on page 266*)



A SPECIAL MESSAGE TO BUSY ARCHITECTS

When funds are limited and the school, hospital, office building or other edifice you are designing has a particular need for a communication system of peak performance and reliability, spend a few moments in reading once again your TelAutograph Telescriber System file.

"No capital investment" is no idle phrase when the savings considered are weighed against the minor monthly rental cost of the TelAutograph telescribers. Maintenance and repair (when necessary) of these instruments are the responsibility of the TelAutograph Corporation. This in itself is a saving to the subscriber.

Summed up briefly, TelAutograph Telescriber Systems provide the user with a dependable handwritten communication arrangement, the operation of which requires no special training. The System provides instant written contact with one or more departments simultaneously. The messages themselves form a trustworthy file of each day's activities. In addition to these features is the rigid maintenance provided by the TelAutograph Corporation.

Literature of both a general and specific nature is available to architects. *Address all inquiries to Dept. A-2.*

TelAutograph CORPORATION

16 West 61st Street, New York 23, N. Y.

"Handwritten Messages Deliver Themselves . . . While You Write"

NOW... a new sanitary fixture for women's rest rooms to increase sanitation and cut maintenance

The Sanistand

THE SANISTAND FIXTURE, developed by the American-Standard Institute of Plumbing Research, is an outstanding contribution to modern plumbing . . . and should be considered in any planning that will involve public rest rooms for women. It is designed to offer women the same convenience and sanitation the standing urinal does for men . . . to make wash rooms cleaner, neater and more pleasing to women patrons . . . and to reduce cost and time of rest room maintenance.

This new urinal is constructed throughout of easily-cleaned, non-absorbent, genuine vitreous china in a variety of attractive colors, and combines efficient flushing action with an extra large outlet to make it completely sanitary in operation and appearance. It is as easy to install as a water closet and can be placed in a regular wash room compartment. When used in modernization work, it usually can be installed where a water closet has been removed.

Test installations prove the Sanistand is popular with women. Out of 5,029 questionnaires filled in by users at department stores, bus terminals, railroad stations, hotels, restaurants, theatres and service stations, nearly 90% show prompt acceptance of this new fixture. Women praise Sanistand—say, "It's much more convenient and more sanitary."

For more complete details, see your Heating and Plumbing Contractor, or send in the convenient coupon below. **American Radiator & Standard Sanitary Corporation,** Dept. AR-4, Pittsburgh 30, Pa.

AMERICAN-Standard

First in heating . . . first in plumbing

American Radiator & Standard Sanitary Corporation
Dept. AR-4, Pittsburgh 30, Pa.

Please send me, without obligation, your new rest room folder, including complete information on the Sanistand.

Name_____

Firm_____

Address_____

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Look for this AMERICAN-STANDARD HEATING PLUMBING *Mark of Merit*

Serving home and industry: AMERICAN-STANDARD • AMERICAN BLOWER • CHURCH SEATS • DETROIT LUBRICATOR • KEWANEE BOILERS • ROSS HEATER • TONAWANDA IRON

PRODUCTS
(*Continued from page 264*)

Quick-Drying Paint

Nu-Hue Quik-Flat reportedly dries to handle, under normal conditions, in 30 to 45 minutes, hardens overnight, and may be re-coated in five hours.

This quick-drying flat finish was developed to meet the needs of speed for finishing banquet rooms, store window backgrounds, interior displays, etc. The paint is available in white and can be colored with liquid tinting colors produced by the same manufacturer. Martin-Senour Co., 2520 S. Quarry St., Chicago, Ill.

Electric Dehumidifier

The *Frigidaire* electric dehumidifier removes moisture from the air automatically by means of electrical refrigeration. The unit is designed for use in any closed area subject to constant or seasonal dampness, and may be plugged into any electrical outlet.

In operation, the unit uses a simplified refrigeration mechanism to cool a series of coils below room temperature. Air is drawn in by a fan and is cooled in passing over the coils, causing moisture to condense. Water thus collected is disposed of either by a fixed drain or a removable container. The dehumidifier is 14-in. in diameter and 33⅝ in. high. The unit controls 8000 cu ft of closed space. Frigidaire Division, General Motors Corp., 300 Taylor St., Dayton 1, Ohio.

Kitchen Range

A new electric range, developed for small kitchens, is left open in kneehole desk fashion to store a kitchen stool, wastebasket, etc. The *Rancho* range is 38 in. wide, and is supported by the usual metal base under the oven on the left. The open side is supported by a U-shaped chrome tubing leg.

"Kneehole" range gives extra storage area and less bulky appearance

The cooking top has two 8-in. and two 6-in. surface units. The oven has automatic heat control and can be equipped with a timer. A convenience outlet for electric appliances is provided. Westinghouse Electric Corp., First National Bank Bldg., Pittsburgh 30, Pa.

Packaged Steel Buildings

A line of packaged steel buildings, which reportedly the purchaser himself can erect without special tools or skills, includes storage warehouses, garages,

(*Continued on page 268*)

"Oh Yes, Typing Is Lots Easier...

...this Underwood All Electric Typewriter is much faster and never tires me out."

WELCOME words to every secretary . . . because the Underwood All Electric conserves so much of her time, and her energy.

When typing, her hands never leave the keyboard. Finger travel, hand travel are minimized . . . with the *Electric* Keyboard, *Electric* Shifting, *Electric* Line Spacing, *Electric* Tabulating, *Electric* Back Spacing and *Electric* Carriage Return.

The new Underwood Electric . . . with the scientifically-designed, exclusive Console Keyboard and Rimlesss Finger-Form Keys . . . provides a light, easy, rhythmic, responsive action. Impressions are uniform . . . all characters clean-cut, perfectly spaced and aligned. All carbons clear, neat, legible. Every letter . . . better!

Welcome news, too . . . to the business man faced with need for greater office efficiency.

Give your Secretary the opportunity to turn out the best work she's ever done . . . with an Underwood All Electric that's made to order for her. Call your local Underwood representative today . . . for a demonstration.

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Typewriters . . . Accounting Machines . . . Adding Machines . . . Carbon Paper . . . Ribbons
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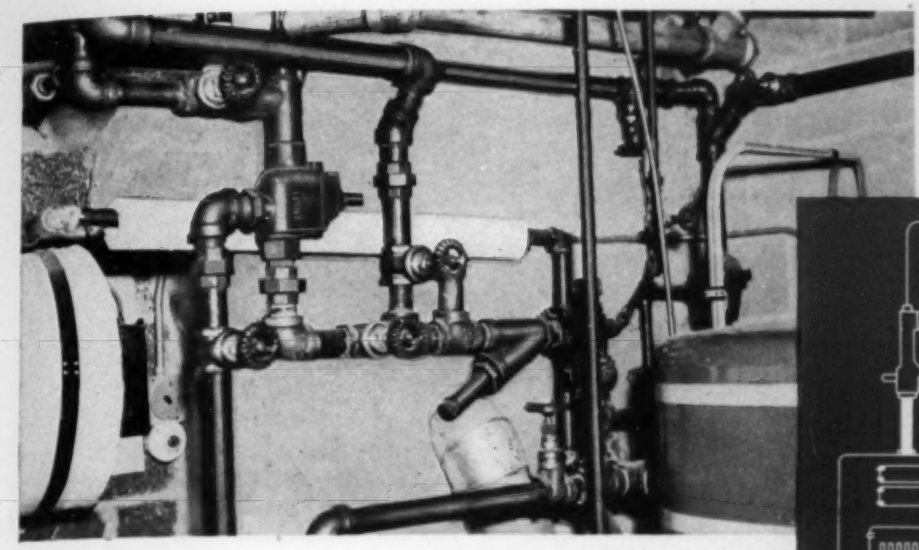
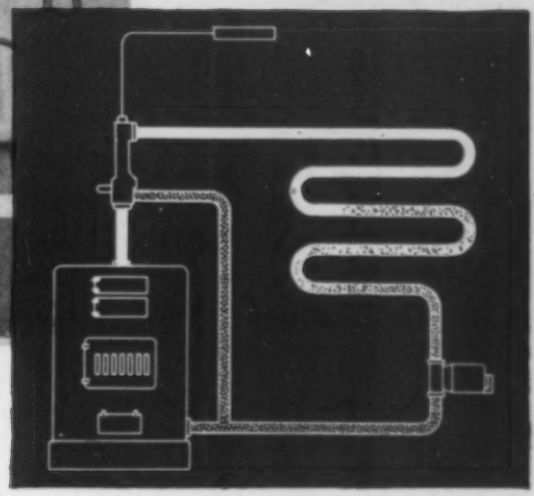
UNDERWOOD *All Electric* TYPEWRITER

. . . Made by the TYPEWRITER LEADER OF THE WORLD





Simplicity is Obvious — **IN PLANNING, SELLING AND INSTALLING**

SARCOTHERM HOT WATER CONTROL

Sarcotherm has made great strides in the past five years, thanks largely to architects and heating men who have appreciated its simplicity, flexibility and low cost. The designer can figure on lower boiler temperatures, even comfort for all outside conditions, zone control, split systems, night set-back—all with the same simple three way valve that comes in a package called "Sarcotherm."

He can compete successfully on any hot water job including the large apartments where engineers sharpen pencils on the fuel costs as well as the first cost. He can help builders compete on homes, when price is involved, or when the owner wants evidence from other users that Sarcotherm is the ideal for comfort, in all seasons.

And finally, because each Sarcotherm job leads to others, the volume of business grows, and since servicing costs of this simple, reliable system are low, the profits go up.

Besides the catalog shown below, which is primarily for the user, Sarcotherm provides mail pieces, technical data and other material, imprinted as desired.

THERE IS A SARCOTHERM MAN NEAR YOU. WHY NOT CALL HIM UP NOW?

Sarcotherm

SARCOTHERM CONTROLS, INC. • Empire State Bldg. • NEW YORK 1, N. Y.

15

PRODUCTS
(*Continued from page 266*)

machine sheds, etc. The buildings are available in widths up to 24 ft, in any desired length, and in steel or aluminum, galvanized or painted with heavy base gray.

Features include paneled gables and die-formed eaves, U-channel draw type connectors, complete insulation. Side walls come in 8-ft-wide sections, 6 or 8 ft high. Doors and windows can be selected from standard stock and inserted where desired. Roof trusses are designed for wood sheathing so that any type of shingle can be used. Any type of siding may also be used. H. D. Campbell Co., Rochelle, Ill.

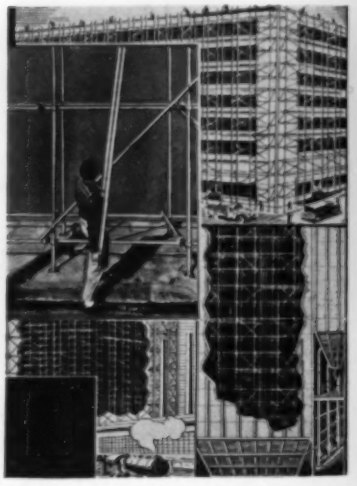
Lighting Selector-Switch

The *Lightronic* control switch employs a radio type knob, with a 1-2-3-4 marking of the control steps. The unit was designed to permit the dialing of a spot of light, several accents of light, or general illumination, as desired.

A typical suggested use for a living room hooks one stop with soft lights illuminating the lower portion of the room; the second would turn on light from above; the third combines both upper and lower lights, and the last turns all lights out. Lightolier, 346 Claremont Ave., Jersey City, N. J.

Aluminum Scaffolds

Lightweight aluminum alloy *Tube-and-Coupler* scaffolds, designed for heavy construction work and for industrial maintenance, are claimed to cut time and cost in half for erection, dismantling and transportation. The scaffolding is said to be less than half the weight of iron pipe equipment, to have twice the gripping friction of steel on steel, and to have ⅓ greater strength than iron pipe tubing of similar diameter.



Aluminum scaffolding is light weight and easily handled, yet sufficiently strong for erection of tall frameworks

The equipment consists of aluminum alloy couplers and locking tubes, with swivel base plates which require no wedging. The units are said to carry a load of over 75 lb per sq ft with a safety factor of 4. Up-Right Scaffolds, 1013 Pardee St., Berkeley, Calif.

Balancing Valve

Equalemp, a bronze balancing valve for hot water radiant heating systems, is said to provide both positive leak-tight shutoff and adjustable flow control. The closing and balancing actions of

(*Continued on page 270*)

THIS MAN IS PAID TO HELP ARCHITECTS AND THEIR ENGINEERS!

He is a specialist in planning and engineering RCA Sound Systems for every type of building: Schools . . . Hospitals . . . Hotels . . . Factories and Offices . . . Churches . . . Department Stores . . . Airports and Terminals . . . Warehouses and Garages . . . Auditoriums . . . Recreational Centers . . . Institutions . . . Stadiums . . .

No matter what size or type of job you have on your drawing boards, you can get practical help from RCA in fitting RCA Sound Systems to your architectural plans. No obligation, of course.

Contact your nearest RCA Sound System distributor or write: Sound Products, Department 3D, Radio Corporation of America, Camden, New Jersey.

RCA

SOUND PRODUCTS
RADIO CORPORATION of AMERICA
ENGINEERING PRODUCTS DEPARTMENT, CAMDEN, N.J.

In Canada: RCA VICTOR Company Limited, Montreal

New Steam Plant in Massachusetts

Contractor:
Thompson-Starrett Co., New York
Architects:
Gilbert Associates, Inc., Reading, Pa.
Engineers:
Negea Service Corp., Cambridge, Mass., and Gilbert Associates, Inc.
Steel Fabricator and Erector:
A. O. Wilson Structural Co., Cambridge, Mass.

The steady growth of Cambridge, Mass., during the last decade necessitated the erection of this new steam-electric generating plant for the Cambridge Electric Light Co. The 10-story, 218 ft x 115 ft structure is located on the Charles River, and is known as the Kendall Square Steam-Electric Generating Station. Its boilers, of 200,000-lb-capacity each, are designed to burn either oil or coal, and its 20,000-kilowatt, turbine-driven generator produces sufficient electricity to satisfy nearly 40 per cent of the city's average daily requirements. A second generator, more than doubling the plant's capacity, is expected to go into service this year.

Beneath the attractive buff-tile exterior of this new steam-electric plant stands a 1350-ton steel framework of Bethlehem Structural Shapes.

Bethlehem
STRUCTURAL SHAPES

BETHLEHEM STEEL

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation
Export Distributor: Bethlehem Steel Export Corporation

PRODUCTS
(*Continued from page 268*)

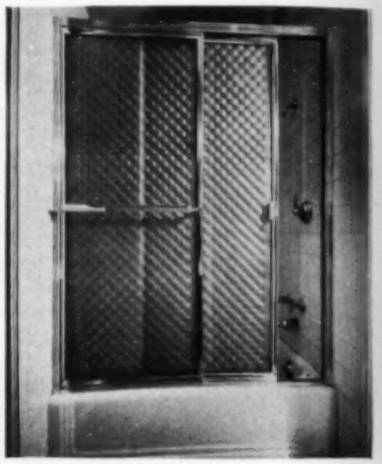
the valve are accomplished by a butterfly type disc. The valve is designed to accommodate standard venting attachments and has a well drilled in the stem for taking temperature readings. The units are available with solder-type ends in sizes ⅜ to ¾ in. or with screwed ends in sizes ¾ to 1½ in. Ohio Brass Co., Mansfield, Ohio.

Clear Anti-Rust Paint

Rustrem Clear anti-rust paint reportedly can be brushed or sprayed directly over rust without wire brushing or scraping. As it will not bleed through painted surfaces and can be painted over with any good quality paint except lacquer, it is said to provide a good rust-proofing primer and undercoater. By applying the paint as a first coat, users can employ any desired finish color and at the same time secure rust protection. Rustrem Clear is available in quart, gallon and 5-gallon cans and in 55-gallon drums. Speco, Inc., 7308 Associate Ave., Cleveland 9, Ohio.

Shatterproof Shower Enclosures

Ripple-Lite tub and shower enclosures and shower doors employ translucent Fiberglas laminate panels set in polished extruded aluminum frames. The units are said to be shatterproof and long lasting. They are available in a waffle indentation pattern, and a wide range of sizes and colors, including rose, green, yellow, maize, aquamarine, opalescent blue and white.



Textured plastic sheets form light, durable shower enclosures in range of colors

The panels are reported to withstand heat and mild chemicals, and to be lower in cost than glass of comparable quality and appearance. Frames are adjustable to compensate for wall variations. O'Morrow Corp., 4509 Firestone Blvd., South Gate, Calif.

Prize Winning Chair

One of the prize winners in the low-cost furniture competition staged by the Museum of Modern Art, a new chair designed by Charles Eames consists of a molded plastic shell, mounted on one of three optional bases. The bases include: four chromium-plated legs with rubber glide tips; a metal shaft with a three-pronged base for auditorium and commercial use; and a version with blond wood rockers joined to metal legs.

The plastic used for the chair is claimed to be virtually indestructible, to withstand stains and most abrasions, and to be warm and velvety to the touch.

(*Continued on page 272*)

Architects: KIVETT and MYERS, of Kansas City, Mo.

Macy's Kansas City of course

everything's up to date at...

Macy's selected only the most modern equipment and furnishings available for its new Kansas City store . . . that's why they chose International Van Kannel Revolving Door entrances.

The beauty of International Van Kannel Revolving Doors helps make any store more attractive and adds prestige to any business . . . an irresistible invitation to customers to come in.

But the greatest value of revolving doors to Macy's, Kansas City, and many other department stores throughout the country, is their utility. Revolving doors cut heating and air conditioning costs up to 25% . . . keep dust, noise, and drafts out . . . and make more floor space "pay" space.

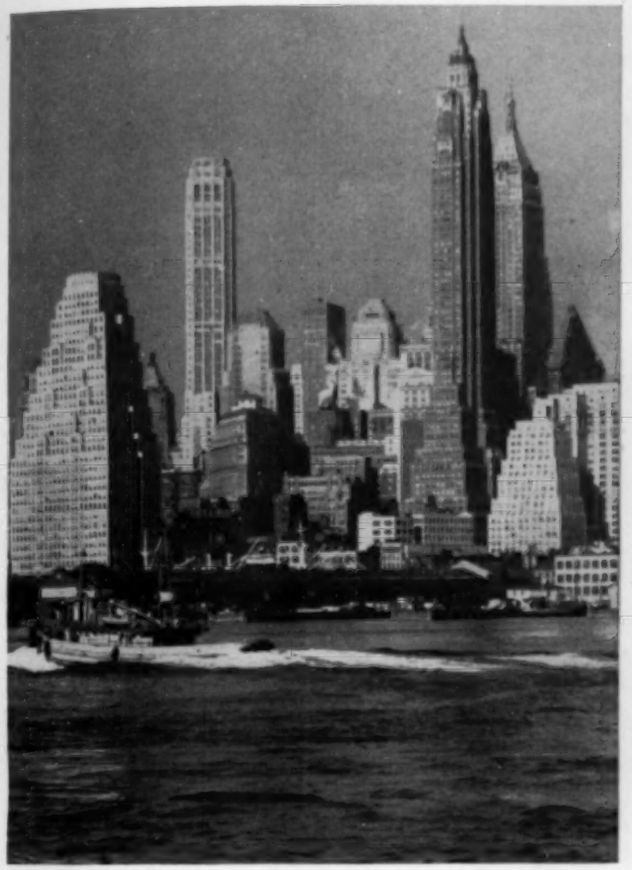
Write today for complete information . . . how International Van Kannel Revolving Doors pay for themselves . . . and build profits!

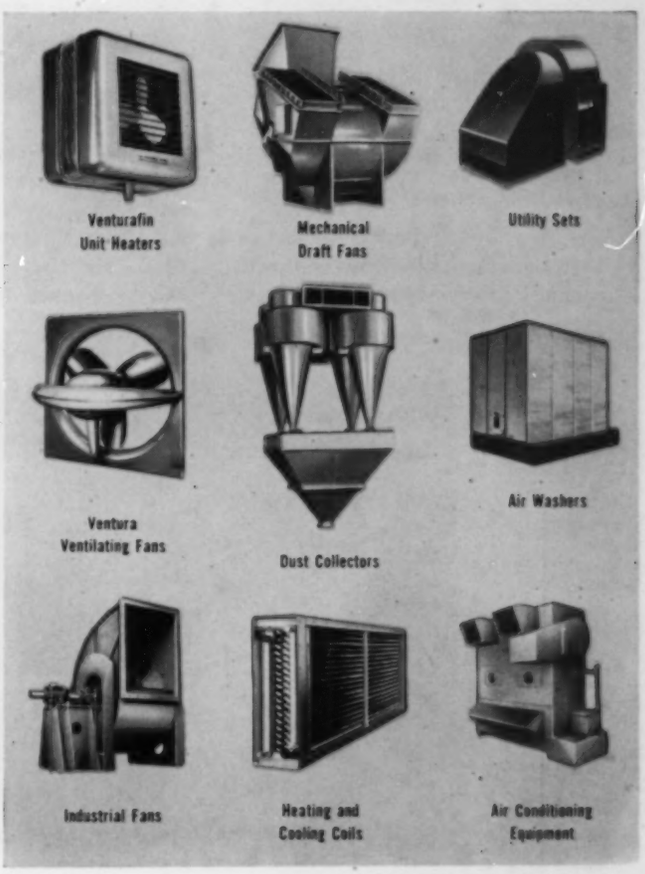
For the rest of the Macy's Kansas City Story, see the April issue of Stores magazine.

REVOLVING INTERNATIONAL VAN KANNEL DOORS

1806 EDGAR ST. EVANSVILLE 7, IND.

American Blower—a time-honored name in air handling





In New York, as in other cities, American Blower Air Handling Products serve commerce, industry and public utilities. For air handling data in the New York area, call American Blower—Bryant 9-2885. Elsewhere, consult your phone book.

Look before you buy. Comparison tests prove the superiority of American Blower Products. There's a big difference in quality, design, quietness, operating costs and efficiency between American Blower and other air handling equipment.

Air is free . . . use it profitably!

IN RECOMMENDING air handling equipment for a wide variety of jobs, you, as an architect, must have a keen sense of values.

For you must determine where to draw the line between "priced" products and quality products. And your good judgment can well result in savings of thousands of dollars later on.

American Blower has built an enviable reputation for building only the highest-quality products. These products reflect a background of over 69 years' experience in the field of air handling. They are tested in accordance with the Standard Test Code and carry Certified Ratings. They are the results of the broadest and most thorough methods of engineering and research known.

To users of air handling equipment, these values build confidence and insure longer, more dependable service and lower operating costs.

To architects with an eye to the future, these same factors insure satisfied clients.

Our nearest branch office will give you full data.

AMERICAN BLOWER CORPORATION, DETROIT 32, MICHIGAN
CANADIAN SIROCCO COMPANY, LTD., WINDSOR, ONTARIO
Division of American Radiator & Standard Sanitary corporation

YOUR BEST BUY

AMERICAN BLOWER

AIR HANDLING EQUIPMENT

Serving home and industry

AMERICAN-STANDARD • AMERICAN BLOWER • CHURCH SEATS • DETROIT LUBRICATOR • KEWANEE BOILERS • ROSS HEATER • TONAWANDA IRON

PRODUCTS
(*Continued from page 270*)

It is available in four colors. The Herman Miller Furniture Co., 1 Park Ave., New York, N. Y.

Lighting Fixture

The *New Yorker* fluorescent fixture is a rectangular troffer-like unit with aluminum louvers and individual mounting on twin- or single-stem hangers. It is designed for the lighting of stores and commercial interiors. Connectors join luminaires end-to-end to form continuous rows. An inside cover plate encloses wiring channel and all operating equipment. Direct-indirect distribution of light is shielded 35 degrees crosswise and lengthwise.

The units are available in a 96-in. size, using four 96-in. Slimline lamps, or eight 48-in. General line lamps, and in a 48-in. size, using four 48-in. lamps. Wiring channels are of steel, finished in baked aluminum. Louvers and channel cover are of aluminum with a permanent etched finish. The Miller Co., Meriden, Conn.

Umbrella-Type Clothes Dryer

The *Clay E-Z-Kary* revolving clothes dryer uses a pulley system to raise automatically the drier arms and lines to the height and tension desired. The unit is set up in galvanized steel sockets mounted indoors or outdoors. Light weight and umbrella action allow the drier to be easily transported from one spot to another. The center post is of rust-proof galvanized steel, and the four pine drier arms hold 120 ft of braided cotton clothes line. Rounded "snag-proof" fasteners are used to cover the threaded ends of all bolts. Clothes Drier Div., Clay Equipment Corp., Cedar Falls, Iowa.

Alarm System

The *Panalarm Series 400* alarm signal system has hermetically-sealed relays on a sealed plug-in octal socket for use in hazardous locations and corrosive atmospheres. Many combinations of light and sound signals are available to warn of abnormal operating conditions. Suggested applications include monitoring speeds, time cycles, pressures, temperatures, liquid or gas flow, or electrical or mechanical equipment operation.

The units are said to have flexibility and low installation cost, and come in standardized multi-unit cabinet designs. Panalarm Products, Inc., 7216 N. Clark St., Chicago 26, Ill.

Explosion-Proof Water Cooler

The self-contained *Temprite* drinking water cooler was planned for use in plants exposed to dust, chemical or gas explosion hazards. Design of the cooler is said to make it impossible for any of its operating mechanism to generate static electricity or produce open sparks. Rated capacity is 10.3 gal. per hour. Outside water pressure variations of as much as 20 to 85 lb have no effect, it is said, on the ability of the cooler to deliver a smooth flow of water. Stainless steel cases and foot pedal controls are available on special order. Temprite Products Corp., Piquette St., Detroit 2, Mich.

(*Continued on page 274*)

for lightweight concrete... use

WAYLITE AGGREGATE

Save up to 35% in deadweight... design up to 4,000 psi

When you want lightweight structural concrete with adequate strength, specify the use of Waylite aggregate.

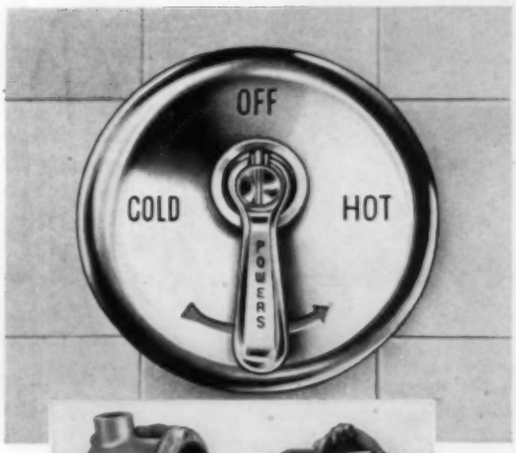
Waylite is a cellular aggregate made by processing molten slag. Its air cells are completely sealed giving lightness and strength. Design for strength with Waylite as in ordinary plain or reinforced concrete. Handles similarly. Approved by Board of Standards and Appeals, New York City. Waylite Concrete 2,000 psi weighs 100 pounds per cubic foot . . . 4,000 psi Waylite weighs 108 pounds.

Waylite offers many important economies and advantages in structural design. Also widely used as floor and roof fills. See data in Sweet's—for additional information and quotations write The Waylite Co., 105 W. Madison St., Chicago 2, or Box 30, Bethlehem, Pa.

WAYLITE AGGREGATE

BANISH "Booby Trap Showers" with the DOUBLE safety of

Right: Type H Mixer for Concealed Piping has 6" diameter dial. Mixer for exposed piping has 3¼" dial.



ONLY ONE MOVING PART, easily accessible from the front. Minimum of maintenance, simple, rugged construction. Parts subject to wear have hard chromium finish.

MODERN SHOWERS require the safest shower regulator made ... POWERS.

POWERS

THERMOSTATIC SHOWER MIXERS

Why be "Half-Safe" with mixers that only protect bathers from scalding caused by *pressure* changes? No mixer is really safe or non-scald that does not give *double* protection against both *pressure* and *temperature* changes in water supply lines... plus a *complete* shut off on cold water failure.

Regardless of (1) *temperature* or (2) *pressure* changes in water supply lines, a Powers thermostatic mixer holds the shower temperature constant. Failure of cold water instantly and *completely* shuts off the shower. Bathers can really relax and enjoy their showers.

May we send Bulletin 358-H?

● For new showers or when modernizing obsolete showers —play safe, use Powers Thermostatic Shower Mixers. Phone our nearest office or use coupon below. There's no obligation.

Just ONE Accident may cost Many Times More than Powers Thermostatic Shower Mixers

The Powers Regulator Co.
2752 Greenview Ave., Chicago 14, Ill.

☐ Please send Bulletin 358-H and prices.
☐ Have an engineer call.

Name _____

Title _____

BTH Address _____

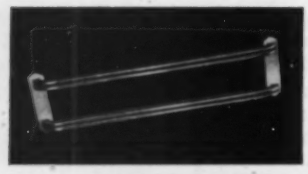
PRODUCTS
(*Continued from page 272*)

Custom-Built Lighting

The new firm of Court Butler Lighting, Inc., announces a "lighting by prescription" service. The aim of the firm is "to interpret architect-engineer custom designs in terms of mechanical construction . . . engineered to provide for easy maintenance, with . . . emphasis on the economics . . . and other important concepts of illumination, such as brightness contrast considerations, glare reduction, color and esthetic suitability."

Arrangements have been made with a group of manufacturers, but the firm states that orders will be processed through the manufacturer best qualified to produce the particular types of equipment involved. Typical lighting fixtures will be furnished to provide full coverage. Court Butler Lighting, Inc., 19 Luther St., Stamford, Conn.

make CIPCO part of your plans



CIPCO CUSTOM-BUILT ARCHITECTURAL HARDWARE

CIPCO PACKAGED PUSH and PULL BARS, PUSH PLATES and KICK PLATES

Your favorite Architectural Hardware Consultant will be happy to work with you in specifying and selecting Cipco Hardware. Our Custom Built department is organized to produce any design desired . . . or we can suggest appropriate layouts. We are equipped to fabricate orders of any size—in brass, bronze, aluminum and stainless steel . . . on prompt delivery schedules. For quality . . . smart appearance and enduring service . . . specify CIPCO *all around.*

CIPCO originated the method of packaging kick plates and push plates as illustrated. Size, style and finish are clearly indicated and screws are enclosed. This method makes for ease of itemization. Also helps prevent mistakes in selection . . . saves time in installation.

Our latest Catalog No. 49 can be obtained from your Hardware Consultant or write us—Dept. R.

Manufacturers of Fine Hardware for 25 Years

CIPCO

CIPCO CORPORATION
22nd and COLE STREET • ST. LOUIS 6, MISSOURI

Clear Plastic Muntins

The new *Clark Steel Reinforcing Door Sections* employ clear plastic muntins between the glass lights to give the appearance of a section with a single light of glass. The sections are tailor made units, designed for use in service stations and other buildings where large glass areas are desirable.

Steel reinforcing is said to provide sufficient rigidity for the sections to withstand the weight of a 212-lb man. Doors to a width of 20 ft can be manufactured, with operating mechanisms using sealed-in grease type ball bearings and special wound springs. Clark Door Co., 515 Hunterdon St., Newark, N. J.

Mechanical Bending Device

The *Tal Handy Bendy* reportedly makes instantaneously a variety of uniform bends, including offsets, in ½ and ¾ in. rigid, EMT thin wall or aluminum conduit. The device has a measuring gage and bend degree indicator to control precision bends made by inexperienced workmen on the job.

The device is recommended for use in either open or slab work, and is said to operate easily without special knowledge. The unit is strong and rigidly constructed from light weight metal. Total weight is 30 lb. Tal Bender, Inc., Milwaukee 2, Wis.

Fibre Rugs

A new series of inexpensive indoor-outdoor fibre rugs is available in twenty color combinations. The rugs are permanized to keep the colorings bright in and out of the sun. Patterns include tweedy textures; block plaids in one-, two- or several colors; and plaids accented with a stripe of white and a line of black. All are made in sizes ranging from 27 by 54 in., to 9 by 18 ft. Waite Carpet Co., 295 Fifth Ave., New York, N. Y.

Gas Conversion Burner

The *International Model 5R* gas conversion burner reportedly eliminates the use of baffle plates and supplies air at both sides of the flame for more complete combustion. The gas ports are designed to direct heat toward the walls of the furnace by means of the combustion air, which can be regulated by means of shutters on the burner cabinet. This is said to make it unnecessary to plaster the burner, which comes in three Btu sizes, with a visible automatic

(*Continued on page 276*)

HAVE YOU RELATED *Thermopane* TO FLOOR SPACE?

The fact that *Thermopane*® insulating glass increases the usefulness of floor space is even more important to schools than the fact that *Thermopane* saves fuel.

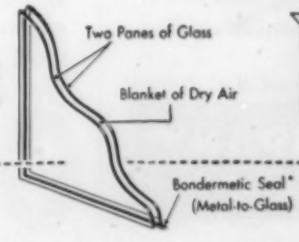
Single glazed windows chill the area immediately beside them creating a "low-comfort zone" during winter. This floor space cannot be used to seat children comfortably. *Thermopane*, which is two panes of glass with a half inch of dry air sealed between, brings the comfort zone right up to the window. For all practical considerations, it makes a room larger to accommodate more pupils—in comfort. Each year, the added area is a dividend on the investment.

Thermopane is the ideal material for achieving good daylighting. A window wall double-glazed with clear, flat glass, transmits 81% of daylight—more than an equal area of any other form of double glass insulating unit.

For further details, write for our *Thermopane* literature.

®

FOR BETTER VISION SPECIFY THERMOPANE
MADE WITH POLISHED PLATE GLASS



L O F *Thermopane*

MADE ONLY BY LIBBEY·OWENS·FORD GLASS COMPANY
5645 Nicholas Building, Toledo 3, Ohio

PRODUCTS
(*Continued from page 274*)

safety pilot of stainless steel, and silver electrical contacts and recycling feature. An automatic gas control valve has a stainless steel core and the gas pressure regulator is of the adjustable type. An air door is provided which allows the secondary air adjustment to remain stationary when the cover is removed. Controls and pressure regulator are inclosed in a metal cabinet. Gas Div., International Oil Burner Co., 3800 Park Ave., St. Louis, Mo.

Steel Overhead Door

The *Morrison Roly-Door* is a new four-sectional all-steel overhead residential garage door, said to require only 5½ in. headroom for an opening 8 ft wide by 7 ft high, or 12 in. headroom for an opening 6 ft 6 in. high. The low headroom bracket is welded to the track assembly at the factory. To hang the door, tracks are installed, the sections are dropped in place with rollers inserted, then snapped to adjoining sections by pivot points and connect springs.

The doors have four horizontally-ribbed sections, with a baked-on gray enamel finish. It comes packaged in a compact carton, and includes stops, rubber astragal, hangers, bracket and tracks. Roly-Door Div., Morrison Steel Products, Inc., 601 Amherst St., Buffalo 7, N. Y.

Float Valve

The *Scoville M-VB No. 16* float valve is claimed to be extremely quiet in operation, and to provide a very fast refill. The valve is said to be adjustable for pressures ranging from 25 to 150 lb. The design embodies a lone cone-shaped bronze valve seat and a regulator. The plunger is equipped with a composition seat washer and a leather split-ring washer. The seat washer retaining cap is of cadmium plated brass and the supply tube is made of heavy gage seamless copper tubing. For ease of servicing, removal of a single thumbscrew from the cross-lever is said to permit removal of the entire regulator-plunger assembly from the valve body. Waterville Div., Scoville Mfg. Co., Waterville 14, Conn.

Portable Printer

The *Fairchild Copy-Roll* is said to make low cost, photo-exact duplicates of any subject that is written, typed, printed, drawn or photographed. The electric unit is reported to be simple to operate, and requires no technical knowledge or skill. Various sizes are available from 8½ by 11 in. to a table model 30 by 42 in., in a price range from $19.50 to $500.00. The small model weighs 2¼ lb and is claimed to fit into the average size brief case or desk drawer. General Photo Products Co., 12 Summit Ave., Chatham, N. J.

Heater For Basementless Houses

The *Mueller Climatrol Type 155* gas-fired horizontal winter air conditioner is designed for attic or crawl space installation in small home construction, or for multiple installation in large ranch style homes. The heater can be installed with perimeter, zone control or conventional forced air systems. It is claimed to be approved for natural, mixed, manufactured, LP or Butane air gases, and for high altitude installation without derating.

The unit has a welded steel, updraft, tubular heat exchanger; cast iron, raised

(*Continued on page 278*)

BARBER-COLMAN

Products for Up-to-date Homes

The BARCOL OVERdoor

"An improved overhead door" offering distinctive features of engineering and construction that insure durability and provide good operation. Barcol OVERdoors are weathertight, yet easy-working. Thousands of homes all over the country can demonstrate thoroughly satisfying installations in all sizes and in special as well as standard designs.

RADIO CONTROL FOR GARAGE DOORS

Here is a really modern home utility that is rapidly gaining in popularity. The driver simply *pushes a button inside the car,* and automatically the garage doors open or close! A great convenience day or night and, in stormy weather, a valuable protection. Barber-Colman Company has pioneered in the development and manufacture of successful radio control equipment since 1928.

NEW MODEL OVERdoor AND RADIO CONTROL NOW AVAILABLE

At the NAHB Exposition in Chicago in February, the new economical Model 31 Barcol OVERdoor and the new Model E Electronic Radio Control for garage doors were shown for the first time. Architects and builders will welcome these new Barcol products because they provide still greater latitude of application, enabling "Barber-Colman" specifications in a wider range of possible installations.

Full information is available from your Barber-Colman representative.

FACTORY-TRAINED SALES and SERVICE REPRESENTATIVES in PRINCIPAL CITIES

BARCOL **BARBER-COLMAN COMPANY**
102 MILL ST. • ROCKFORD, ILLINOIS

How to make Insulation a Dramatic Feature in your plans . . .

The story of Aluminum's radiant heat reflectivity is challenging, exciting . . . and convincing. Clients like the idea of this modern "miracle" inside their walls and attics, under the floor joists of unheated crawl spaces. They talk about BTU's bouncing off the aluminum . . . up to 95% of all radiant heat.

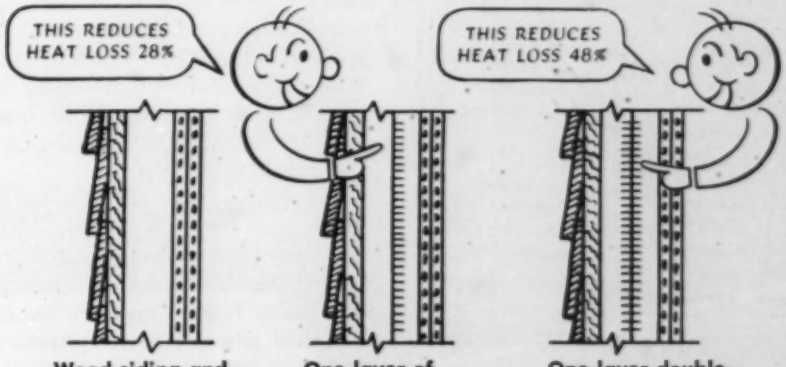
Technically, it's a sound specification . . . providing the perfect vapor barrier together with high insulating efficiency. Under floor joists, one layer of Type B (foil two sides) has a conductance coefficient of approximately 0.10—meets FHA requirements in most areas. Over ceilings or under rafters, one layer of Type B is excellent to take off summer sun load; two reflective-faced air spaces give you a conductance of approximately 0.14; or the single foil face (Type C) may be used with blanket insulation. In side walls, Type B bowed between studs provides extremely high efficiency at low cost . . . see diagrams below.

Turn the prosaic subject of insulation into a *Sales Feature* . . . with Reynolds Aluminum Reflective Insulation. Write for folder in A.I.A. file form. **Reynolds Metals Company,** Building Products Section, Louisville 1, Ky. Offices in 32 principal cities.

REYNOLDS ALUMINUM REFLECTIVE INSULATION

Aluminum foil bonded to one side (Type C) or both sides (Type B) of tough kraft paper. Special pressure-embossing strengthens the bond and produces a handsome pattern effect. Clean, odorless, pliable, fire-retardent. Easy to cut, bend, tack or staple. In boxed rolls of 250 square feet, 25", 33" and 36" wide. Rolls weigh 15 lbs.

Also board types, for use as exposed wall and ceiling material. This is aluminum foil bonded to one or both sides of 15-pt. cardboard. Supplied in 25" and 17" widths, in rolls of 2,000 square feet.



Wood siding and frame, uninsulated —overall heat loss 0.25 BTU/hr/°F.

One layer of single-faced foil —overall heat loss 0.18 BTU/hr/°F.

One layer double-faced foil insulation —overall heat loss 0.13 BTU/hr/°F.

IF YOU SEE RUST YOU KNOW IT'S NOT ALUMINUM

REYNOLDS *Lifetime* ALUMINUM BUILDING PRODUCTS

GUTTERS and DOWNSPOUTS

RESIDENTIAL CASEMENT WINDOWS (also Fixed and Picture)

ARCHITECTURAL SHAPES

5-V CRIMP and CORRUGATED ROOFING AND SIDING

WEATHERBOARD SIDING

INDUSTRIAL CORRUGATED BUILT-UP ROOFING

NAILS

FLASHING

ROOFING ACCESSORIES

REYNOLDS ALUMINUM